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ABSTRACT

Analysis of the costs of employing older workers indicates that some types of employment costs do vary by age and that overall compensation costs increase with age, largely because of increasing employee benefit costs. There is, however, no statistical evidence that direct salary costs increase by age on an economy-wide basis. The belief that older workers cost more seems generally related to feelings about performance and productivity; however, statistical evidence does not indicate generally poorer performance or productivity by age, and the limited statistical data available refute the basic notion that older workers are less capable. One problem that needs to be addressed when discussing an aging work force is the problem of skill obsolescence; if older workers are to remain cost effective, their skills must be continuously updated through training and education to assure continued productivity. Policymakers must recognize the need for lifelong education, but must take care that legislative and regulatory requirements affecting employment costs for older workers do not place undue cost or administrative problems on employers. Such costs would discourage the employment of older workers. (MN)

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THE COSTS OF EMPLOYING OLDER WORKERS

AN INFORMATION PAPER

PREPARED FOR USE BY THE

SPECIAL COMMITTEE ON AGING
UNITED STATES SENATE

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
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PREFACE

The aging of the work force will be a prominent issue facing both Congress and employers during the coming decade. Regardless of the exact rate of growth in employment, any degree of substantial economic growth combined with a dramatic shrinkage in new entrants to the labor force will mean a relatively tighter labor supply in the United States compared to any time in recent history. This situation will raise the demand for older workers, yet serious concerns have been raised relating to the costs of an older labor force.

Under circumstances where fewer younger workers will be available to meet labor demand, policies encouraging early labor force withdrawal may require modifications. The extent to which employment costs are related to age may therefore become an increasingly significant factor in the costs of doing business.

The availability of pension benefits at relatively early ages and the desire on the part of some to encourage early retirement has fostered the view that older employees are "more costly" than younger workers and that incentives to retain such employees are not cost effective. Some limited studies have attempted to disaggregate employment related costs for older employees on a firm specific basis. To date, however, comprehensive data relating to the costs and benefits of employing older workers has been lacking. We hope this print will serve to clarify the advantages as well as the concerns of employers facing a maturing labor force.

Reviewed and examined in this committee print are the factors which affect employment-related costs, and those factors which may be related to age. Statistical data on age-related costs is presented to the extent that is available. Where no data is available, the issues which affect costs and how they relate to age are discussed. The paper deals with direct compensation, employee benefits, turnover, and other human resources issues. It takes a broad human resources perspective and also deals with issues such as training, performance, and productivity.

This paper was prepared for the Special Committee on Aging in conjunction with the Employee Benefits Research Institute [EBRI], a nonprofit research organization designed to investigate all aspects of the employee benefits field. The committee and EBRI retained Malcolm Morrison and Anna Rappaport for the development of this paper. Mr. Morrison is a faculty research associate in public policy and management at The Wharton School at the University of Pennsylvania. Ms. Rappaport is a principal in the Chicago office of William M. Mercer-Meidinger.

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EXECUTIVE SUMMARY

The aging of the work force will be of major importance to employers during the coming decades and has policy implications for both the public and private sectors. This committee print examines factors related to patterns of labor costs by age and discusses the implications of these factors. The print discusses direct compensation, employee benefits, turnover, training, performance and productivity, and presents both statistical data and qualitative information.

The evidence indicates that there are some types of employment costs which vary by age, and that overall compensation costs increase by age, largely because of increasing employee benefit costs. There is, however, no statistical evidence that direct salary costs on an economy-wide basis increase by age. Employee benefit costs are not usually separated by age, and individual employers do not generally make hiring and retention decisions on the basis of benefit costs or differences in such costs. However, general increases in medical care costs combined with an expanding set of laws and regulations has served to focus the spotlight on employee benefit costs for older workers, and it is possible that employers will give more consideration to this issue in the future. Employers who have implemented window early retirement programs have also focused on this issue.

The belief that older workers cost more seems generally related to feelings about performance and productivity. There is no statistical evidence to indicate generally poorer performance or productivity by age, and the limited data available refutes the basic notion that older workers are less capable. However, there is a significant issue relating to maintenance of skills and training. Over time, as the nature of work changes and the skills of the employee are not kept up to date, there will be an increasing mismatch of skills to the job, leading to deterioration of performance on that specific job. If older workers are to be cost effective, their skills must be continuously updated through training and education to assure continued productivity.

The two major conclusions from a public policy viewpoint are as follows:

(1) It is extremely important to encourage the maintenance of skills and lifelong education to prevent older worker obsolescence and to provide individuals with the skills to compete on a fair basis for jobs within or outside of their companies. Up-to-date skills are more important than any age-related capabilities in human resource costs and older worker productivity.

(2) Legislative and regulatory requirements affecting employment costs for older workers should not place undue cost or administrative problems on employers. Such requirements can discourage the employment of older workers.

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The print is divided into 7 sections as follows:

(1) Overview of factors affecting the cost of human resources.
(2) Distribution of the compensation dollar.
(3) Employee benefit costs.
(4) Benefit costs attributed by age.
(5) Cost of compensation packages.
(6) The older worker in the workplace; and
(7) Policy implications and further research issues.

The cost of labor per unit produced is a function of direct compensation, employee benefits and what each employee produces. What is produced in turn is influenced by factors such as turnover, absenteeism, productivity while at work, etc. Numerous legal requirements affect benefit plan requirements, and these have been changed several times in the last few years. Section 1 discusses both the elements of the compensation package and the other factors which influence cost of employees.

Conventional wisdom suggests that older workers are paid more than younger workers for the same job and therefore older workers cost more. This rationale has frequently been used to support early retirement programs on the assumptions that younger workers can be hired to replace older workers at lower cost. However, section 2 presents statistical data on family earnings by age and a longitudinal study based on inflation adjusted earnings of a group of workers covered by Social Security over a long time period. These studies indicate that older workers overall do not make more, but on the contrary after about age 50, real earnings decline with age. For individual employers, the pattern will depend on the system of compensation and such patterns vary by employer.

However, in specific situations workers may be paid more than they are worth, particularly if there are job matching and obsolescence problems or a seniority based pay system. This issue deserves major attention.

Employee benefits are the cost element for which there is specific quantitative evidence of age-based cost variation. An approach has been developed to allocate costs by age based on age related differences in claim costs expected, and differences in the periods over which funds invested can earn interest.

Analysis of the compensation dollar indicates that 9.9 percent of the total dollar is paid for pension and welfare benefits, for which the costs are age related. In section 3, background information is presented on the methods of financing employee benefits, and how age is recognized either explicitly or implicitly in the development of such costs. Then in section 4, the authors develop a system of attributing the costs of this 9.9 percent of the compensation dollar to age which isolates those parts of the cost that relate to differences in expected claim costs. This method was developed for this work and is considered appropriate for consideration of policy issues. It is not necessarily appropriate for an individual employer in costing employee benefits.

In section 5, the authors have developed a number of examples of different compensation packages and used the methods of attributing cost by age to get age related costs of compensation. These costs assume no difference in direct compensation and look at specific differences in medical benefits, pensions, and life insurance. Other benefits such

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as disability have been excluded since the total cost of such benefits is relatively low. At ages 50–54, the compensation package is worth 1 to 7 percent more than at ages 45–49 depending on the type of benefits offered. At ages 55–59, the package is worth 1 to 16 percent more than at 45–49, and at 60–64, the range is 5 to 34 percent. The greatest differences are found where there is a generous medical plan with employee contributions and a generous defined benefit pension plan. The medical plan is the most important factor for lower paid workers, and defined benefit pension plan is the most important factor for higher paid workers. The differences by age will be much smaller when pensions are provided through a defined contribution plan and the medical plan is less generous.

There are various alternatives for handling benefits at 65–69 so no general conclusions can be reached. Issues relating to this age group are discussed in section 5.3.

Section 6 discusses factors related to the performance of the older worker in the workplace and looks at functional changes related to age. The authors conclude that the major difficulty which is likely to arise is a mismatch of workers and jobs.

The data on many of the issues discussed is scant, and in some cases it does not exist at all. As the age mix of the population changes, it will be critically important to productively and satisfactorily employ older persons. Improvements in mortality rates when combined with changes in birth rates over time will make it important for individuals to work longer. The authors have suggested a number of areas for further research in order to help provide the data needed to support this goal. These are discussed in section 7.

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THE COSTS OF EMPLOYING OLDER WORKERS

Section 1

GENERAL OVERVIEW

The effective cost of personnel is a function both of the amount which people are paid, whether in the form of direct wages or indirect compensation such as employee benefits, and of what employees produce. This section of the paper reviews the approach to handling the compensation package and discusses noncompensation issues which affect the cost and value of different groups of workers. Noncompensation issues are discussed with respect to the continuing work force. Turnover issues are discussed separately.

1.1 BACKGROUND

Concerns about productivity and the competitiveness of American business have forced employers to pay more attention to the effect of the costs of employees on the cost of their products and services. Americans have learned that when goods can be produced on a more cost-effective basis overseas, consumers often buy foreign products.

Changes in the economy, particularly in the last 5 years, have also forced many employers to more carefully examine their work forces and often to reduce them. At the same time that the economy has been difficult, health care costs have risen to more than 10 percent of gross national product. In response to difficult economic conditions, the use of early retirement incentives has also accelerated in the last few years. These forces acting together have focused more attention on the cost of employee benefits, particularly health and pension benefits.

Historically, employers viewed the cost of employee benefits as an overall percentage of pay, perhaps allocating these costs to profit centers and locations. Little attention was paid to the fact that different employees received benefits of different values. Employer-paid health benefits were more valuable for those with families than for single employees; certain benefits also had underlying values which differed by age.

Several developments, however, caused employers to increasingly focus on the costs of benefits by age. In 1978, the Age Discrimination in Employment Act amendments banned mandatory retirement before age 70 for most employees, and specific requirements were set forth with respect to how employee benefits were to be treated. The development and publication of these requirements focused attention to the cost of benefits at age 65–69 and how the cost differed from the costs for younger employees.

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Then in 1982, TEFRA amended medicare so that employer coverage became primary for employees who remained in active service from ages 65–69. Previously, medicare coverage was offered to these people on the same basis that it was offered to those already retired. This legislation again encouraged employers to look at the specific costs of benefits for older persons.

These two legislative developments combined with the greater concern about benefit costs generally have caused employers to focus on questions about how costs vary by age.

One last background issue should be mentioned. Legislation enacted in 1978 and 1980 permits employers to offer plans of employee benefits which allow choice between different benefit plans. The Revenue Act of 1978 and the Miscellaneous Revenue Act of 1980, as amended, permit a choice between taxable benefits, cash, and nontaxable benefits. There is increasing interest in benefit plans permitting choices. When employees are allowed to choose between benefits and cash, or between different benefits, the cost for specific employees becomes much more important. The same considerations apply with voluntary benefits. For example, if employees can buy extra life insurance or trade life insurance for something else, it must be age rated to be viable.

Due to the demographic changes which are bringing about the aging of the work force, issues of costs of benefits related to age will continue to increase in importance as employers consider the implications of overall costs of compensation.

1.2 APPROACH TO COST OF THE COMPENSATION PACKAGE

The pay package consists of direct compensation in the form of a stated salary or hourly wages, time off in various forms, and employee benefits in the form of pensions, life, health, disability and accident benefits, and reimbursement for education. In some cases other items such as day care, clubs and company-sponsored activities are included in the compensation package.

Some forms of compensation have costs which can be directly allocated to individual workers. For example, each worker has a specific salary or amount of direct compensation which is paid in a given year. For purposes of this analysis, we will look at patterns of direct compensation by age to determine what, if any, conclusions can be drawn about the differences in cost of workers by age. Other forms of compensation provide a benefit plan to a large group of people on the basis that there will be some averaging of experience over the entire group. The employer traditionally has been concerned with the total cost of a benefit, rather than a cost allocated to individuals. For benefit plans, we will look at *underlying* expected claim costs by age to see how the value of the compensation package differs by age. The cost of direct compensation and several benefits will be combined in section 5 to show how the cost of the benefit package varies by age for different pay levels and benefit plans.

Accident insurance can be used to explain the value approach. One way of thinking of the costs of a benefit is to say that every employee who has a claim has a cost equal to the dollars paid as a claim, and that everyone else has a cost of zero. Such an approach provides for no risk

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sharing in the cost allocation. Accident insurance involves a very high level of risk sharing in the provision of the benefit. The frequency of accidents is low, and so the premium is low, but the cost for the worker who has an accident is very high. If the plan were insured by individual insurance policies, and the insurance company charged a price which fairly reflected the chances of each employee having a claim based on individual risk characteristics, there would be a specific cost which could be allocated to the employee. More typically, the insurance company will charge a price which is the same amount per month per employee regardless of the age and sex of the employee, but which is based on the claim characteristics of the total employee population.

From one perspective, the cost is the same regardless of employee age. But another view of this issue is that the cost should be allocated by looking at the underlying claim cost variations expected by age, so that a different cost could be attributed to employees with a different claim expectancy. Theoretically, this is appealing if the employer is interested in knowing the true cost of different age segments of the work force. However, there may be practical problems in making such allocations because of inadequate data. There may also be theoretical objections to making a distinction on this basis because the cost determination method does not allocate or build costs by age, making a distinction on this basis inappropriate. If the program is fully self-insured, or heavily experience rated, so that the employer pays for the cost of his own claims, the arguments for looking at claim cost are somewhat different. The issue of expected variations by age must be balanced with issues related to actual experience which includes the effect of statistical variations. In a small employee population, the statistical variations will be significant, which will make generalizations about age-related costs more difficult to document.

It should also be noted that for benefits based on risks with a high cost of claim and relatively low frequency of claims, it is only because insurance is available that the small employer can offer the benefit. The insurance stabilizes the cost and makes it both predictable and manageable. Self-insurance becomes feasible when the overall variation in expected claims represents a reasonable risk level.

Today, claim experience for employees typically is not disaggregated by age groups. For purposes of this discussion, however, we will assume that it is appropriate to look behind the stated average cost for employee benefits, and attempt to determine the allocation of benefit costs by age. The expected claim costs are implicit in either the self-insurance cost or the insurance company rates. It will also be assumed that expected costs are appropriate for analytical purposes. To the extent possible, these costs will be developed on an age-specific basis.

It should also be noted that by using expected costs by age, we are making an arbitrary decision that age is an appropriate basis of classifying for cost purposes. In examining the expectation of having an accident, for example, we could have chosen to use factors such as sex, number of miles driven each year, type of work duties, alcohol consumption, and so forth. From a hypothetical viewpoint, a number of different kinds of factors can be correlated with differences in expected claim costs for different benefits. Some of these factors are directly related to higher claim costs, whereas others may be statis-

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tically associated with differences in claim costs but not be directly related to actual experience. It is a biological fact that costs of providing life insurance or annuity benefits are different by age and sex. It is a result of behavior that smokers have higher costs for life and health insurance benefits.

What factors can be used in an analysis of expected claim costs depend on data availability. What factors may be appropriately used in allocating costs are also a function of social policy decisions. The purpose of this analysis is to focus on the relationships between age and cost, and so age will be used as the only classification category. But, it is important to recognize that factors other than age have often been found to explain differences in the occurrence of events such as accidents, morbidity, and mortality. In specific companies, the allocation on a basis other than age will usually be the most effective and practical approach given the difficulty of obtaining data by age. Aggregate cost is the most common basis. Sometimes claim experience by location is used.

Section 3 of this paper discusses how benefit costs paid by employers are developed. Section 4 discusses techniques and data which can be used to attribute these costs to employees at different ages.

Key Points and Policy Issues

For this analysis. we develop expected claim costs by age for life insurance pensions and health insurance, and assume age and expected claim costs are appropriate cost attribution factors. These are benefits where there is strong quantitative evidence of cost valuations by age. These factors can be used to assign overall plan costs to employees.

1.3 NONCOMPENSATION ELEMENTS OF COST—CONTINUING WORK FORCE

What people produce is a function of how the work is organized, what mechanization is used, how well people are matched to jobs, and how well the individual performs. The output produced by a group of people working as a team can be more or less than the sum of what each could produce working individually. The work organization today generally involves a combination of people and some type of mechanization or automation. If there are several people involved in a process, how they interrelate has a substantial effect on the total cost of the process and the total output. The matching of people to jobs, and the maintenance of that match over time, has a large effect on the productivity of individual workers. One aspect of this matching is continued education to maintain skills. If a group of workers is not given adequate education as the work changes, their productivity will drop.

Some people believe that productivity or performance declines with age. However, there is no evidence to prove that age is directly related to performance. Specific jobs have different kinds of current qualifications needed to perform them. These qualifications include physical abilities, mental abilities, specific education, experience, and skills.

The qualifications needed to perform a specific job may change over time as technology and/or the organization of work changes. Poor matching of people to jobs is a problem in some organizations. There

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are two types of matching issues: matching at time of employment and maintaining a good match. Maintaining a good match requires that an organization be able to assess performance, continue to keep skills up to date, and have a system of moving people to other jobs or out of the organization when there is no longer a good fit. Historically, some organizations were reluctant to deal with performance problems and other issues with respect to longer service employees, but were willing to allow them to remain until they retired. In such cases, the problems frequently grow worse because there is no further training to keep skills up to date. In addition, supervisors may reflect the attitude that they really do not expect very much of the employee. This leads to productivity problems which may be viewed as being age related, when in fact they are a result of poor management of personnel. Perceived deterioration of productivity because of age may be the result of failure to maintain match rather than of actual change in productivity.

These issues will be discussed further in section 6

Key Points and Policy Issues

Maintaining a good match between workers and job assignments is very important in maintaining productivity. Problems perceived as age problems may be match problems.

Public policy should strongly encourage continued education throughout life.

Lack of access to training can have severe consequences for workers.

Good performance evaluation systems are vital to successful management of a work force on a nondiscriminatory basis.

There is no documented relationship between age and productivity.

1.4 TURNOVER

Turnover is costly to employers. The specific cost involves a number of different items, including:

(1) Poor performance in the last few days (or months) on the job.

(2) The cost of locating and recruiting the new employee.

(3) Training of the new employee, which includes time of the trainer, and reduced productivity in the early stages.

(4) Disruption in operations or customer relations.

(5) The cost of losing firm-specific human capital.

In the case of employees with low skill who can be recruited readily without significant recruiting expense, the cost of turnover is low, and might equal 2 weeks' to a month's pay. In the extreme case, the employer does not see any cost.

In some cases, however, the cost of turnover may be 1 to 2 years' pay or even more. A professional or a manager may require months to recruit, with a fee to a search firm of 30 percent or more of a year's salary. The employer doing the recruiting may spend many hours screening and interviewing candidates for the job. If the individual recruited must be relocated, and owns a home, the new employer will occasionally buy the home and provide some assistance in purchasing a new home. This type of relocation may cost 25 to 50 percent of a year's pay or more. It may be 6 months to a year before the new em-

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ployee is really familiar with the new company, and if customer relations are involved it may take years to build up relationships which are at the level of the replaced employee.

Occasionally, an organization will lose customers when an employee leaves, and depending on the situation the cost can be very high.

Another situation which can be particularly difficult is the employee who is developing and maintaining computer systems or some other complex part of the workflow. In such cases, the new employee may never fully develop the historical perspective which the old employee had. Some computer systems get completely rewritten mainly because it is hard to change other people's programs.

Another area where turnover is costly is in the area of sales where there is a reasonably long training period. Life insurance companies, for example, may hire 10 or more new agents for each person who becomes successful as an agent. The cost to replace an established, successful agent may be several hundred thousand dollars and may require recruiting a number of people.

In contrast, there will also be an occasional situation where turnover is profitable or beneficial. For example, if an organization has been automated and needs to reduce its work force, voluntary turnover is preferable to costly forced terminations, provided that the right people leave. Another situation is the case where there is a mismatch between the person and the job, and there is no convenient way to correct the mismatch on a basis which is acceptable to both parties and practical within the organization.

There are no general rules about the cost of turnover, and its cost will vary by organization and by job within each organization. In a specific case, the cost can be calculated approximately. Older workers tend to have lower turnover rates than younger workers, which can be a significant cost advantage to employers, particularly in areas where there are a lot of people with middle level skills, and high turnover rates.

Low turnover also leads to cost advantages because it enhances the transfer of knowledge from more experienced to less experienced employees, enhances the development of the organization's knowledge base, and saves on recruiting costs. In many cases, it also enhances morale.

Turnover rates generally vary by length of service, and grade down sharply during the first few years of employment. For example, if 40 percent of employees terminate in their first year of employment, 20 percent might terminate in the second year, and under 10 percent in later years. The heaviest turnover usually occurs in the first 2 years of employment.

So far, this discussion has focused on voluntary turnover, generally in situations where the employer would have preferred for the employee to stay. There are also many situations where the employer will initiate termination of the employment relationship, either because of unsatisfactory performance or a change in circumstances so the employee is no longer needed. A change in circumstances may be reorganization of the work, a decline in business, moving of a plant, or similar company organization modifications. Employer-initiated turnover is generally costly also, even when no replacement is needed. One of

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the costs of such turnover is reduction in morale of the remaining employees. Also, loss of firm-specific knowledge can adversely affect productivity. The costs of employer-initiated turnover can vary by age to the extent that the employees terminated have vested rights to employee benefits. In addition, the termination arrangements may provide for severance pay which may vary by length of service. To the extent that service is linked to age, greater amounts would be paid to older workers, but this should not be considered an age-related cost per se.

This discussion of turnover has focused on the cost to the employer. The cost of turnover may also be very high for the individual. Older employees often have a significantly harder time getting new jobs, and may have to take jobs at lower pay levels. Some employees are able to markedly improve their situations by changing jobs, and it is personally good strategy to move out of a bad situation which has no hope of improving if a suitable alternative is available. However, retirement plans frequently require 10 years of service for vesting of benefits, and the formulas are designed to reward the employee with long service in one company at time of retirement. Also, a new job is always risky to the individual, and the probability that a job will not work out is likely to be the greatest in the first 2 years of employment.

Key Points and Policy Issues

Older workers tend to have lower voluntary turnover rates than younger workers. This should be viewed as an area of cost advantage for older workers.

Cost of turnover is variable, depends on the specific job and the labor market, and can be very high.

Turnover can be viewed as the way to solve certain types of personnel problems which cannot be resolved within the current workplace.

Turnover of older portions in the work force can negatively affect productivity because of loss of technical expertise.

Turnover can reduce the ability of the organization to transfer knowledge between older and younger workers, which can be very costly in terms of retraining expenses.

There is inadequate data to attach a quantitative measure to this factor.

1.5 REGULATORY REQUIREMENTS AND BENEFITS FOR WORKERS AT DIFFERENT AGES

Existing law imposes specific requirements with respect to employee benefits for workers aged 65–69. As a general rule, employers must offer the same benefits to workers regardless of age. There are, however, some exceptions described here.

The major benefit requirements with respect to workers aged 65–59 specifically are set forth in the Age Discrimination in Employment Act of 1978 [ADEA], the amendments to the ADEA which were part of the Tax Equity and Fiscal Responsibility Tax Act of 1982 [TEFRA], and the interpretations of the ADEA.

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Some key requirements are as follows:

(1) Benefit plans must not discriminate by age, and in general employers must continue benefits for employees through age 69.

(2) Pension accruals are not required after age 65 in the employer's primary pension plan, whether it is a defined benefit or a defined contribution plan. This is an area of possible change.

(3) Contributions must be continued to a secondary defined contribution plan.

(4) Medical benefits must be continued for age 65–69, and the employer's plan will be primary over medicare. This was required by TEFRA and became effective January 1, 1983. Employers with significant numbers of employees over age 65 are concerned about this provision because of potential costs for higher rates of health claims by these employees.

(5) Life insurance must be continued; benefits may be reduced at age 65 to equalize costs between employees who are ages 60–64 and those who are 65–69. A 30-percent reduction will be considered to meet the requirements.

(6) Disability plans may stop benefits at age 65 if disability occurs before age 60. If disability occurs after age 60, benefits must be continued but never beyond age 70. The regulations provide alternative methods of adjusting benefits which will equalize costs. The concept is to change the benefits provided by reducing the amount or period payable so that an age 65–69 employee will have an expected cost amount equal to that for an employee 60–64.

Two other exceptions to the general rule about benefits and age should be noted. Under the Employee Retirement Income Security Act of 1974 [ERISA], employers may exclude employees under age 25 from pension plans. They may also exclude employees hired after age 60.

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Section 2

COMPENSATION

In this section, we discuss statistical data which indicates relationships between direct compensation age and present data on the mix of the compensation dollar.

2.1 DIRECT PAY AND THE MIX OF THE COMPENSATION DOLLAR

Conventional wisdom indicates that older persons are paid more than younger persons for doing the same jobs, and that older workers cost more as a result. In some early retirement programs, the underlying rationale is that older employees can be replaced with younger employees at a lower price.

There are several issues involved: Age-related differences in income, quality of match of the employee to the job, and the cost of replacement. In this section, only the issue of income and age will be considered.

Hourly pay systems may have the same rates for everyone, or may have higher rates with increased seniority. To the extent that older employees have more seniority, they will have higher average pay rates in seniority-based hourly systems.

However, a salaried pay system generally consists of a set of job classifications or grades which have different pay ranges attached to them: A system for changing the ranges and starting salaries with inflation, a system for providing periodic changes in pay to employees as they move from grade to grade, and a reward for good performance. It is not clear that pay automatically increases substantially with seniority and age. Pay increases consist of a combination of merit, promotion, and adjustments as the scales change. In many cases, the increases reflect merit and promotion only, and there is no explicit or separate adjustment for a change in scales or to reflect inflation. Many organizations which gave cost-of-living increases in the past have stopped doing so. However, they continue to adjust the pay scales which serve as the basis for new hire compensation. Where the increases are for merit and promotion only, the new employee may be paid just as much as someone with experience, or nearly as much. The difference between the change in starting pay, and the adjustments in the pay of existing employees at a particular grade level is a critical variable in this regard. This issue is particularly acute where there is a tight labor market and employers are competing for the same pool of people, so that they may be willing to pay a premium to get someone to join the firm.

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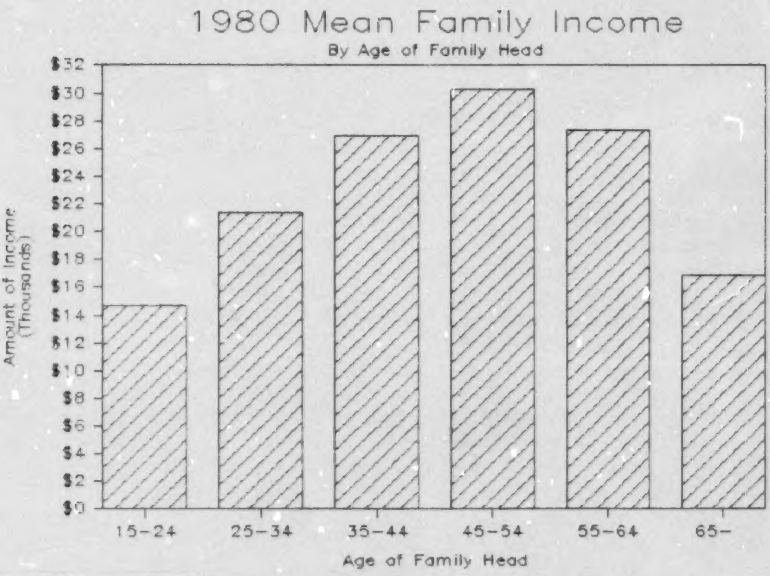
There is some data available on income related to age. Three sets of data will be reviewed here. Chart 1 gives national data on family income by age, the results of a study of a sample of the individuals covered by Social Security which shows how their income changed by age, and data for some hypothetical populations based on the actual pay distribution of the employees covered by some pension plans.

CHART 1



National data [chart 1] shows that family income increases by age until it peaks in the 45–54 age bracket, and that it declines moderately from this bracket to the 55–64 bracket and sharply after age 65. This effect is due to the interaction of many factors including wage levels and retirement. It should also be pointed out that this data represents the population at a single point in time, rather than one group of people who have been tracked over time.

The Current Population Surveys provided data on money income of households by age of householder for 1970 and 1980. The data below is mean total household income:

	1970 mean income	1980 mean income
Age:		
15 to 24	$7,115	$14,696
25 to 34	10 313	21,394
35 to 44	12,193	26,927
45 to 54	12,858	30,279
55 to 64	10,572	27,319
65	6,518	16,918
All ages	10,001	23,794

Source: P. 461, 1980 Statistical Abstract and p. 435, 1983 Statistical Abstract.

Household income peaks in the 45–54-year-old age group, with the peaking more significant in 1980 than it was in 1970. Chart 1 shows 1980 data in graphic form. The increase from the 35–44 group to the 45–54 group was 5.5 percent in 1970 and 12.5 percent in the 1980 data. The 1980 results include more two-income families. The reduction from 45–54 to 55–64 was 17.8 percent in 1970 and 10.8 percent in 1980. The reduction from 55–64 to 65 and over was 48.8 percent in 1970 and 38.1 percent in 1980. In 1980, there were relatively few persons in the labor force over age 65, and this number has been declining over the long term. The relatively higher income over age 65 reflects a growth in retirement benefits from public and private sources. The relatively higher income at 55–64 may reflect the changes in retirement plans plus the presence of more two-income families.

The question which we are studying is whether older workers are paid more for the same work than younger workers. Taken alone, the data above really does not provide any answer to this question. However, it appears that the belief that older workers are paid more may be a myth since there is no direct relationship between household income and age.

The next step in looking at this issue is to review data on earnings over the life cycle. A major study of such data was done for the Congressional Research Service by the Consultant Panel on Social Security. In this study, the earnings of a sample of the people covered by Social Security were analyzed over a long period of time. This study focused on the period 1956 to 1971. The earnings of the group by age and sex were also looked at in each year. The historical earnings were indexed to remove the effect of changes in wage levels. Earnings from the first calendar quarter were used to remove the effect of the maximum wage base. The findings are stated in the report as follows:

> Typically, until age 35, individuals experience wage growth that is much more rapid than the growth of average earnings in the economy. Between ages 35 and 64, individual earnings growth does not differ too much from the growth of the economy-wide averages for those who do not claim retirement benefits. There are large unexplained elements in individual earnings after one has adjusted for the typical age structure and for other components of steady growth. Adjusted for movements out of covered employment, the typical age structure of earnings does not vary much with the level of earnings between the upper two-thirds of the income distribution. It is different at the bottom of the income distribution showing a less rapid growth to the level of peak earnings. The random component in earnings is smaller in percentage terms the higher the income level.

This data shows that earnings for males go down after the mid-1950's and is generally consistent with the pattern found in the household income data. Females tend to show more of an increasing pattern by age, but their overall earnings are much lower. The two sets of data differ in that the household income is based on one point in time and the Social Security study represents the same people, but over a long period. The Social Security study does not separate those

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who stayed with a single employer from those who changed jobs. However, it provides significant evidence that overall older workers are not paid more. Exhibit 2–1 shows the relative earnings levels for males in 1956, 1961, 1966, and 1971. Exhibit 2–2 shows the same information for females. This data is based on the worker, rather than the family unit. The data is shown graphically in charts 2–9.

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Exhibit 2-1
Relative Mean Earnings by Age in Various Years
Data is Indexed by Mean Earnings by Sex - Male Data

Data from Report of the Consultant Panel on Social Security
to the Congressional Research Service - August, 1976

Age	1956	1961	1966	1971
21	0.4879	0.4274	0.3917	0.3776
22	0.5396	0.4967	0.4918	0.4421
23	0.5688	0.5763	0.5819	0.5157
24	0.6500	0.6283	0.6611	0.6702
25	0.7214	0.6773	0.7094	0.6838
26	0.7564	0.7961	0.8176	0.7666
27	0.8440	0.8093	0.8195	0.8224
28	0.8860	0.8542	0.8942	0.8968
29	0.9620	0.9022	0.8982	0.9650
30	0.9648	0.9330	0.9619	0.9480
31	1.0012	0.9957	0.9700	1.0118
32	1.0072	1.0121	0.9820	1.0290
33	1.0331	1.0285	0.9854	1.1119
34	1.0524	1.0808	1.0605	1.0755
35	1.0829	1.1039	1.1160	1.1357
36	1.1001	1.1199	1.1051	1.1123
37	1.1331	1.0911	1.1145	1.1583
38	1.1020	1.1294	1.1191	1.1785
39	1.1157	1.1393	1.2055	1.1866
40	1.0828	1.1519	1.1664	1.2295
41	1.1219	1.1521	1.2287	1.2224
42	1.1632	1.1895	1.2239	1.1923
43	1.1803	1.1597	1.1648	1.2624
44	1.1624	1.1543	1.1828	1.2656
45	1.1224	1.1083	1.2133	1.2477
46	1.1236	1.1954	1.2260	1.2660
47	1.0999	1.1747	1.2274	1.2283
48	1.1201	1.1741	1.1942	1.1917
49	1.1270	1.0846	1.1433	1.1938
50	1.1110	1.1103	1.1792	1.2386
51	1.1827	1.1820	1.1618	1.1790
52	1.1912	1.1099	1.1715	1.2547
53	1.0971	1.1263	1.1271	1.1700
54	1.1254	1.1170	1.0477	1.1420
55	1.1062	1.0488	1.0513	1.0655
56	0.9935	1.1128	1.0564	1.1303
57	1.1159	1.1144	1.0267	1.1439
58	1.0292	1.0792	1.0630	1.0714
59	1.0971	1.0818	1.0245	1.0743
60	0.8548	1.0152	0.9946	0.9968
61	0.8848	0.9587	0.9968	1.0637
62	0.9465	1.0784	1.1816	1.0574
63	0.9710	1.0879	1.0476	1.1598
64	0.8628	1.1889	1.1661	1.1972

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Exhibit 2-2
Relative Mean Earnings by Age in Various Years
Data is Indexed by Mean Earnings by Sex - Female Data

Data from Report of the Consultant Panel on Social Security
to the Congressional Research Service - August, 1976

Age	1956	1961	1966	1971
21	0.7896	0.7185	0.7026	0.6376
22	0.8510	0.7961	0.7995	0.7641
23	0.8914	0.8316	0.8905	0.8828
24	0.9092	0.8706	0.9297	0.9363
25	0.9171	0.9220	0.9090	0.9405
26	0.9103	0.9156	0.8314	0.9423
27	0.9654	0.8359	0.9174	0.9521
28	0.9323	0.8526	0.9451	0.9897
29	0.8452	0.8518	0.8331	0.7989
30	0.9654	0.8633	0.8866	0.9290
31	0.8757	0.9903	0.9554	0.8928
32	0.9565	0.8757	0.9129	0.9300
33	0.9753	0.9404	0.8702	0.9332
34	0.8888	0.8800	0.9080	0.9320
35	1.0168	0.9850	0.9272	0.9122
36	0.9675	1.0171	0.9304	1.0366
37	0.9848	1.0116	0.9272	0.9536
38	1.0787	0.9663	1.0273	0.9739
39	1.0000	0.9867	0.9643	0.9829
40	1.0021	1.1134	1.0738	1.0875
41	0.9974	1.0326	1.0066	1.0276
42	1.1007	1.0510	1.0453	1.0422
43	1.0509	1.0895	1.0413	1.0668
44	1.0656	1.1127	1.0318	0.9975
45	1.0855	1.0338	1.0742	1.1199
46	1.0756	1.0783	1.0882	1.1691
47	1.0992	1.0908	1.0672	1.0893
48	1.0908	1.0883	1.1714	1.0740
49	1.0672	1.0865	1.1155	1.1015
50	1.1427	1.1431	1.1074	1.1152
51	1.0740	1.1058	1.0476	1.1199
52	1.0771	1.1106	1.0665	1.1109
53	1.1317	1.0596	1.1200	1.1779
54	1.1301	1.1508	1.1193	1.1335
55	1.1957	1.2546	1.1767	1.1415
56	1.0435	1.0835	1.1718	1.1132
57	1.0950	1.1195	1.0976	1.1084
58	1.0832	1.1063	1.1106	1.0916
59	0.9281	1.1521	1.2050	1.1856
60	1.0519	1.1508	1.1052	1.1937
61	0.9822	1.1015	1.1733	1.1262
62	1.2046	1.2513	1.1470	1.2156
63	1.1868	1.1787	1.2306	1.2509
64	0.3722	1.2037	1.4351	1.2793

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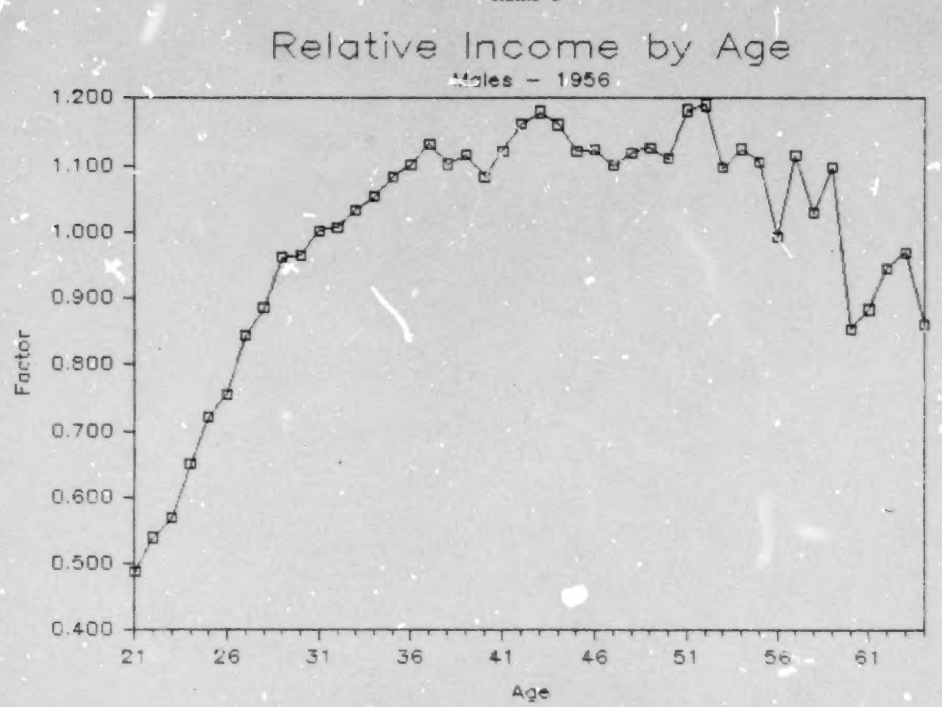
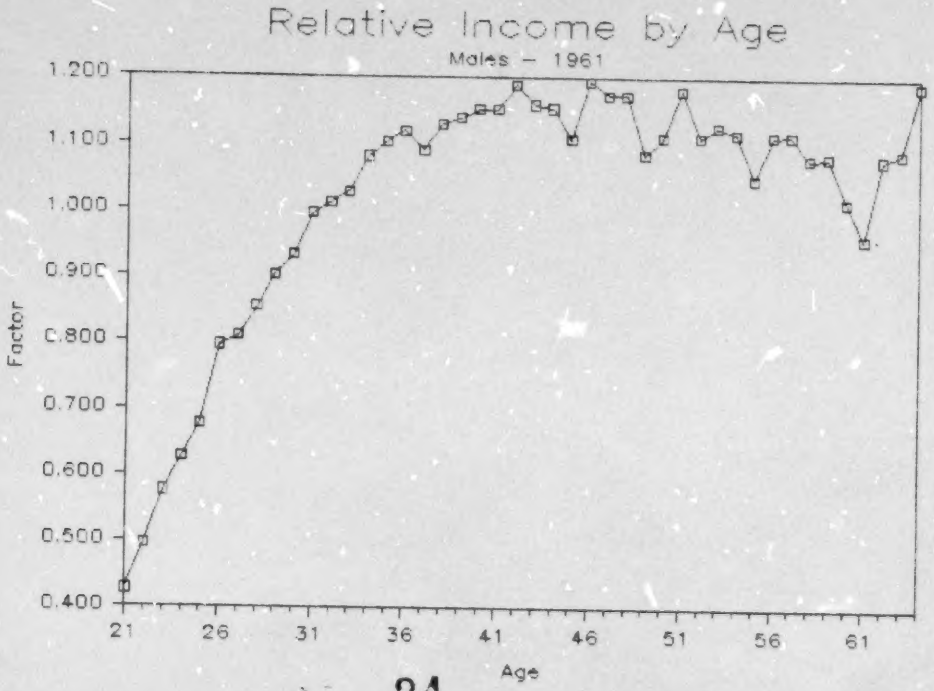
CHART 2


Relative Income by Age
Males - 1956
1.200
1.100
1.000
0.900
0.800
0.700
0.600
0.500
0.400
Factor
21
26
31
36
41
46
51
56
61
Age

15

CHART 3


Relative Income by Age
Males – 1961
1.200
1.100
1.000
0.900
0.800
0.700
0.600
0.500
0.400
Factor
21
26
31
36
41
46
51
56
61
Age

16

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CHART 4

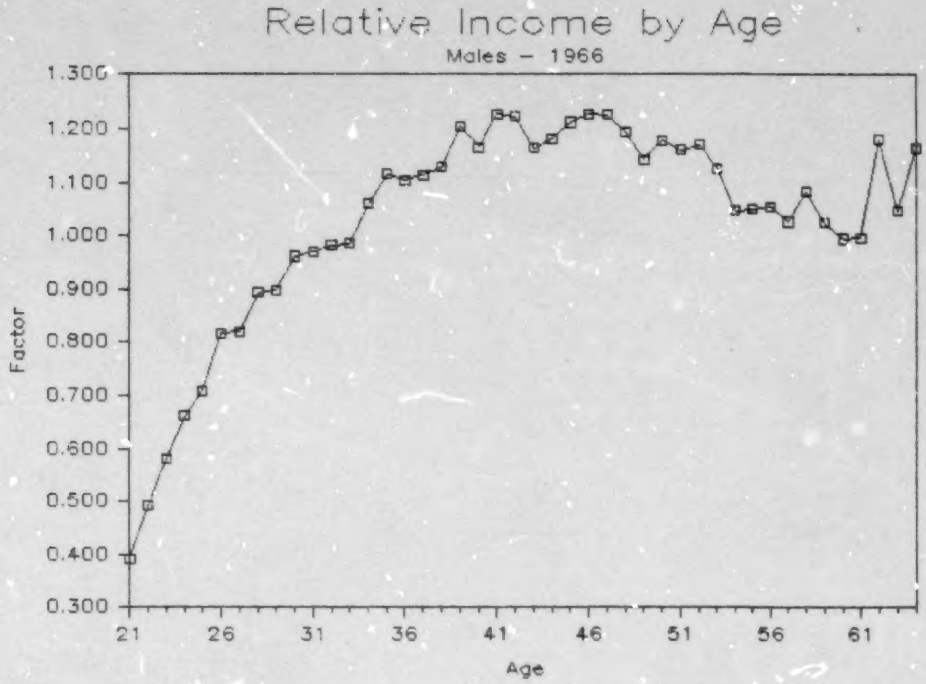

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CHART 5

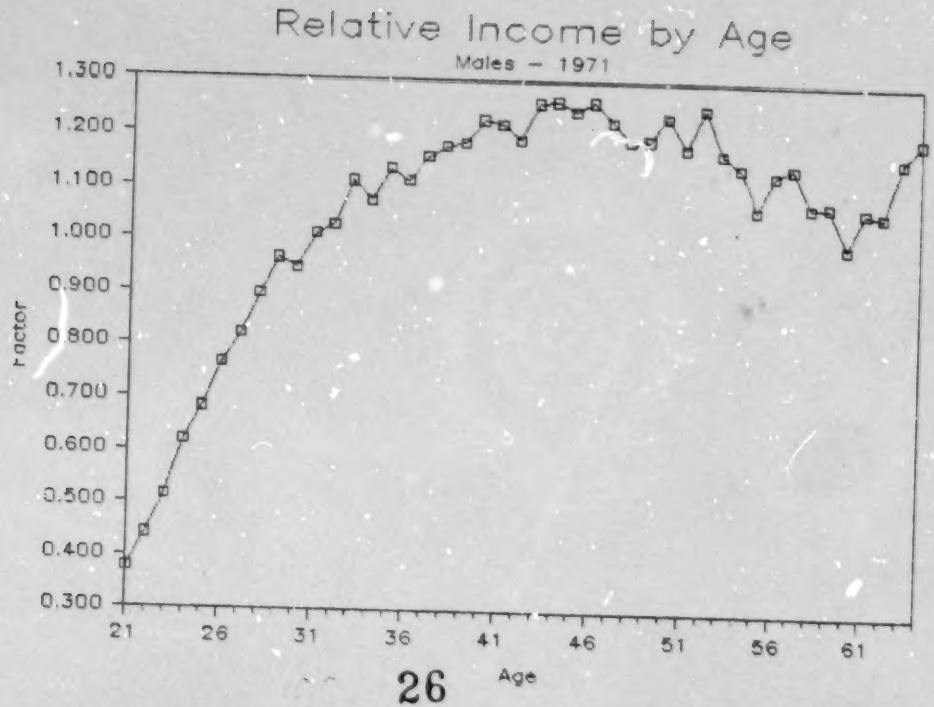

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CHART 6

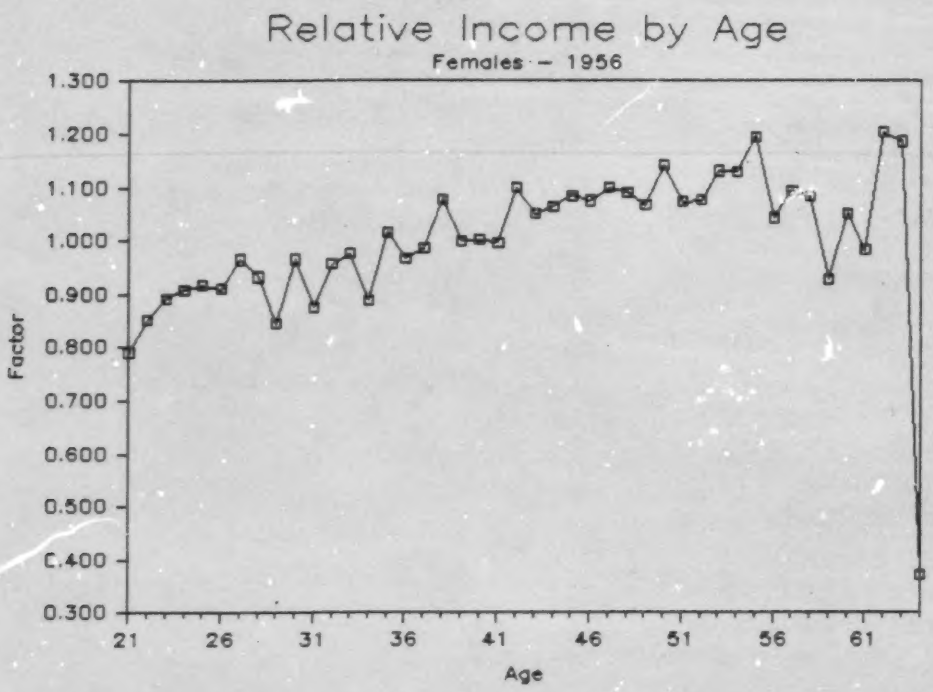

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CHART 7

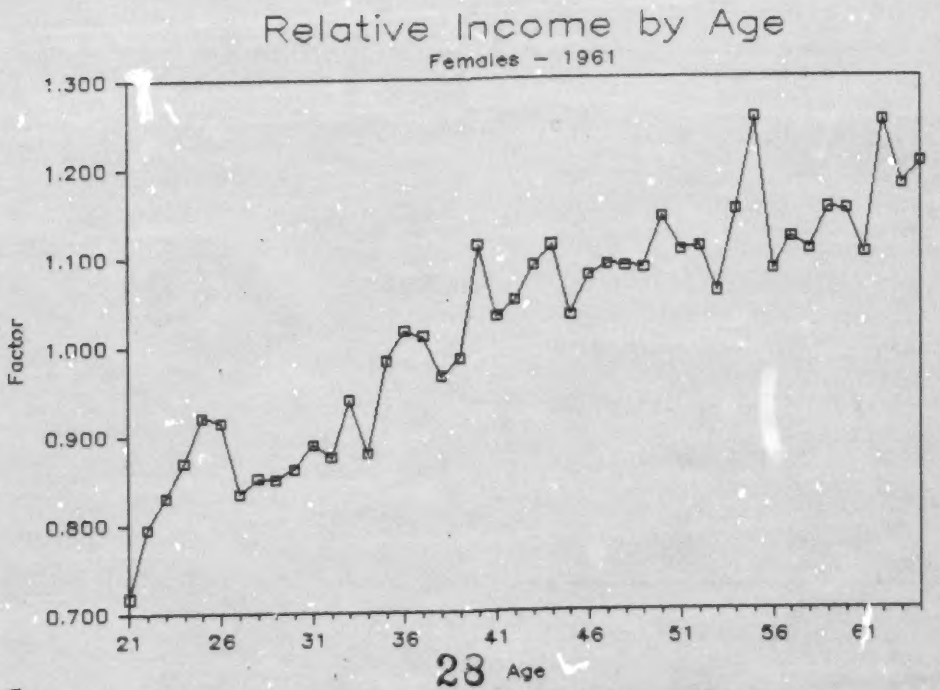

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CHART 8

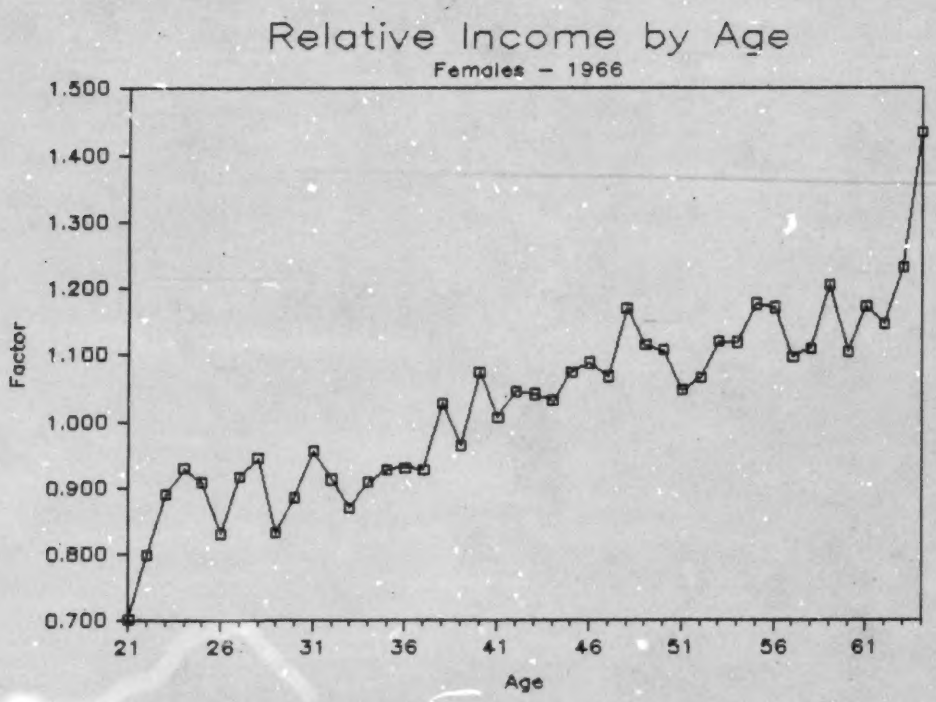

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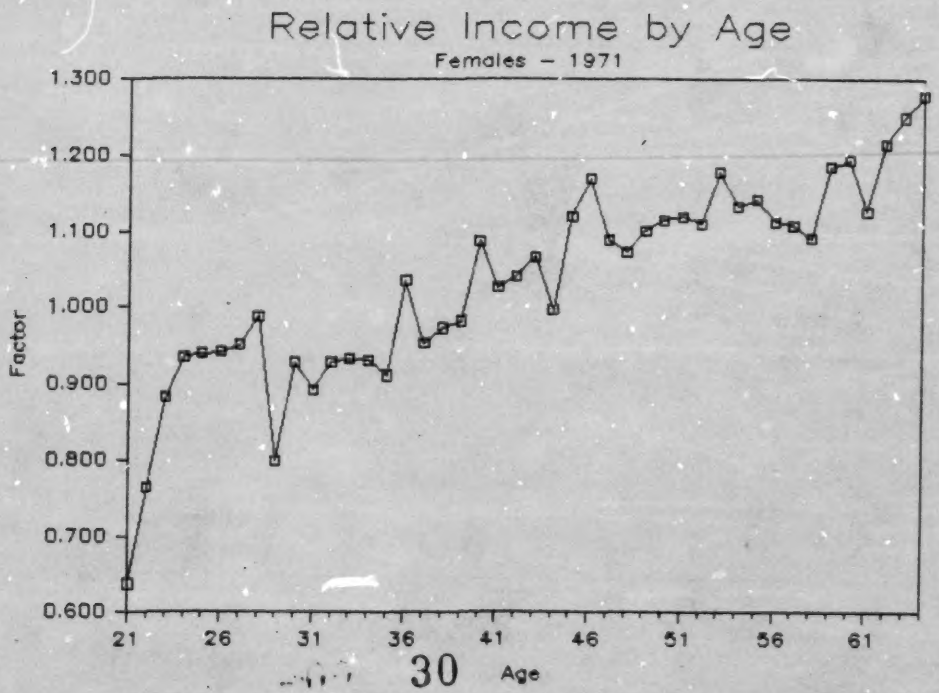
CHART 9



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The authors decided to review employer-specific data in order to see if very different results would be found. Data by age and salary shows that peak earnings are likely to be found in the 35–54 age ranges, and that within a given age range there is no correlation between average earnings and length of service once an initial period after employment has been excluded. This type of review is based on looking at pension plan data covering all the employees of an employer, and still does not address the specific issue of age and pay within a particular job assignment.

It is the opinion of the authors that there is significant evidence to indicate that older workers are not paid more on any consistent society-wide basis. They may however be paid more in specific employment situations. The situations where individuals are paid more than it is currently perceived that they are worth may often flow from matching problems and skills obsolesence rather than from a compensation system which gives higher pay to salaried workers based solely on seniority. Retraining is key to avoid a growing mismatch. Our conclusions with respect to pay and age are not valid in any collectively bargained situations where there is direct pay for senority. Specific research is needed to prove these hypotheses and quantify them. But, since there may not be a direct relationship between earnings and age of employees, the theory that older employees are always more costly in terms of compensation has not been confirmed.

Key Points and Policy Implications

There is inadequate evidence to show a general quantitative relationship between age and compensation.

The specific situations where older workers have higher compensation in specific jobs may be linked to matching problems.

Compensation systems are not necessarily designed to use seniority or age as the basis for establishing levels of pay.

More information is needed to understand differences in male and female wage patterns by age and the implications of such differences.

2.2 MIX OF COMPENSATION DOLLAR

The Chamber of Commerce of the United States regularly surveys employee benefit spending by employers in different areas of business activity. Exhibit 2–3 shows the mix of the compensation dollar excluding legally required payments from the 1981 U.S. Chamber of Commerce survey.

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Exhibit 2-3

Spending for Employee Benefits in the United States

Data from 1981 Chamber of Commerce Survey of Employee Benefits

Type of Benefit	% of Direct Compensation	Average Amt. Spent per Ee	% of Total Compensation
Pensions and welfare benefits (employer share of cost)	12.7%	$2,256	9.9%
Profit Sharing and bonus	2.2%	$ 391	1.7%
Payment for time not worked	13.4%	$2,381	10.4%
Direct Compensation	100.0%	$17,767	77.9%
TOTAL	128.3%	$22,795	100.0%

NOTE: Legally required payments have not been considered compensation for this purpose.

Pensions and welfare benefits account for 9.9 percent of the compensation dollar. Profit sharing and bonuses are 1.7 percent; direct compensation is 77.9 percent; and time not worked is 10.4 percent. There is a demonstrable difference by age in costs for part of the 9.9 percent. The 9.9 percent can be further disaggregated from the study as follows:

	Percent of payroll	Percent of total compensation dollar
Pension	5.2	4.1
Life and medical insurance	6.0	4.8
Disability	.6	.5
Dental	.4	.3
Miscellaneous	.4	.4
Total	12.6	9.9

The variations will be discussed below in the section on employee benefits. As indicated above, there does not appear to be a provable difference by ages in direct pay, which is 77.9 percent of the total compensation dollar. Pensions, life and medical are the most important age related components of the benefit package. These will be discussed in depth in sections 3 and 4.

For time not worked, there are a number of factors interacting. For many employers, vacation is linked to length of service, and for such firms older workers on average would have higher vacation costs. However, older workers tend to have lower rates of absenteeism than younger workers so it is not possible with existing data to link any cost differ-

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ence to the 10.4 percent of the compensation dollar represented by time not at work.

Profit sharing and bonuses generally do not vary by age. They are usually stated as fixed percentages of pay, or as subjective amounts based on current performance.

Section 3

EMPLOYEE BENEFITS—HOW EMPLOYERS PAY FOR BENEFITS

This section of the paper will provide an overview of the way benefit costs are determined from an employer viewpoint, and indicate what factors are used in the determination.

Underlying these costs are factors which may but need not be apparent, including age-related factors. Section 4 will take a different approach to employee benefit costs, in that it will examine a method of attributing costs by age, so that compensation package differences by age can be developed for different scenarios.

Employee benefit costs are generally described in terms that represent averages over an entire employee population. The cost may be a percentage of payroll, a rate per thousand of coverage, or a per employee cost. The decisions to implement plans, and also to change them, are based on costs stated in such terms. This is an adequate framework for most employer decisions where the employees have no choice about their benefits.

3.1 HEALTH BENEFIT COSTS TO EMPLOYER

To provide a perspective and background to assist in understanding cost differentials by age, we first discuss how health benefits costs are charged to the employer.

The employer can provide these benefits through a health maintenance organization [HMO] or through a program which reimburses the health care provider directly, or the employee for all or part of the health care cost. The HMO is paid a cost fixed in advance for each employee covered, and the cost is the same for the year regardless of the actual service rendered. The service is rendered by the HMO. The reimbursement plans offer benefits which are paid as illness occurs. These plans will inlude a description of how much will be paid under different circumstances.

From the employer's viewpoint, there are a range of approaches available for financing reimbursement type health plans. These are described schematically on exhibit 3–1, and range from totally insured approaches to totally self-insured approaches. Under a totally insured approach, an insurer sets a price for the coverage and the employer simply pays the claims as they occur. (An outside organization may be hired to administer the program and pay the claims. Insurance companies frequently offer these services under administrative services only [ASO] contracts so that the involvement of an insurance company does not mean the program is insured.) There are also a variety of arrangements available which provide for a division of the risk between the employer and an insurance company so that there is some

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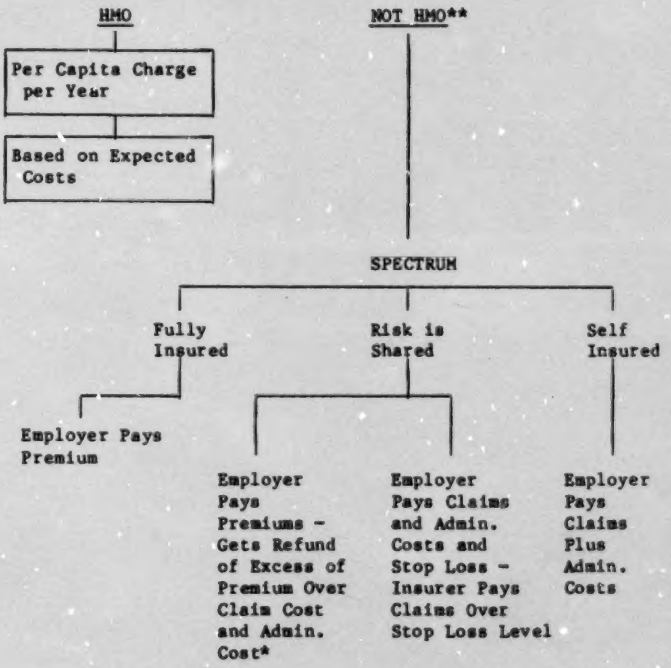
insurance. Under these arrangements, the insurer may guarantee the maximum amount which the employer will pay under a stop-loss arrangement, or the insurer may charge a premium which can be refunded in the event of good experience. Another variation of the refund arrangement is set up so that the employer pays a relatively low premium, but can be required to pay an additional premium up to a maximum at the end of the year depending on experience.

Exhibit 3-1

Alternatives for Employer Payment for Health Care


HMO
Per Capita Charge per Year
Based on Expected Costs
NOT HMO**
SPECTRUM
Fully Insured
Risk is Shared
Self Insured
Employer Pays Premium
Employer Pays Premiums - Gets Refund of Excess of Premium Over Claim Cost and Admin. Cost*
Employer Pays Claims and Admin. Costs and Stop Loss - Insurer Pays Claims Over Stop Loss Level
Employer Pays Claims Plus Admin. Costs

* Various methods can be used.

**May offer complete choice of providers, or may offer incentives to use particular providers.

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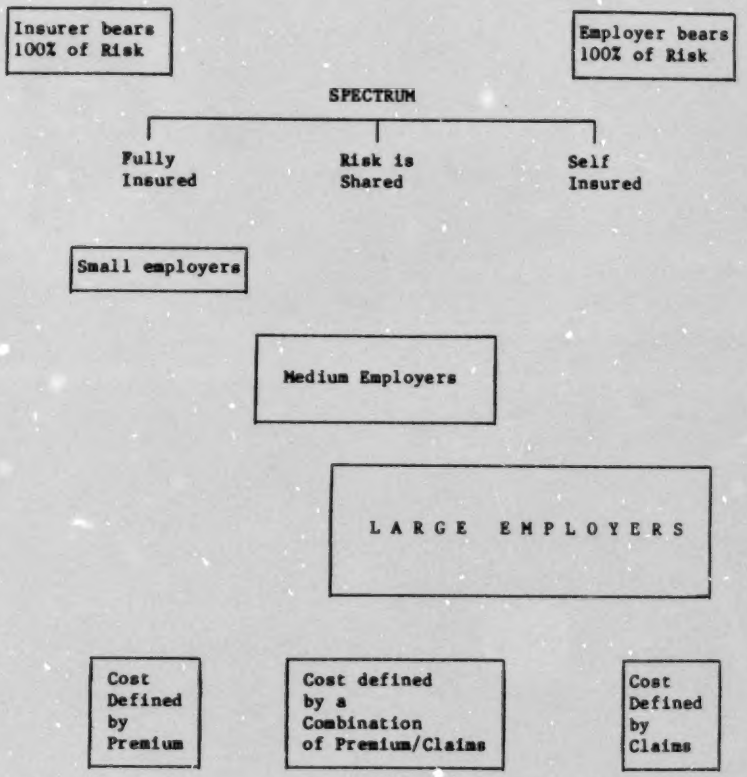
The employer will choose the approach desired on the basis of attitude to risk and cash flow considerations. The options which are available and logical vary significantly, based on the size and type of employer. Exhibit 3-2 shows the relationship between employer size and spectrum of options for providing health care benefits, and also shows how cost is defined along the spectrum.

Exhibit 3-2

Alternatives for Employer Payment of Health Care

Use and Definition of Cost



Exhibits 3-3 and 3-4 show the factors which influence claim costs and premiums. For purposes of this analysis we will assume that premiums are developed as a function of expected claim costs, even though for small groups they represent claim costs for many different employers rather than for one employer only. The data used to develop costs by age are based on the idea that expected claim costs are the appropriate measure.

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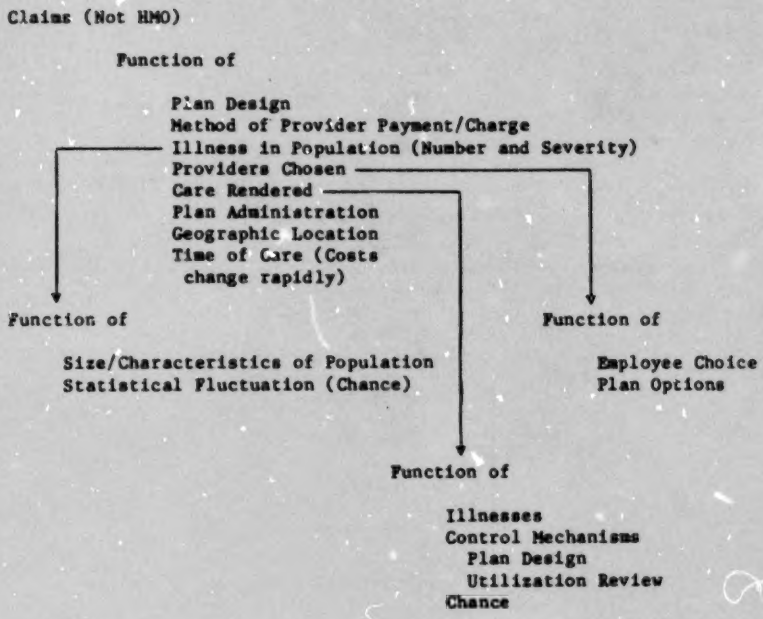
Exhibit 3-3

Factors Influencing Claim Costs



Notes: 1. In small group variation is very large.

2. Control mechanisms are possible in every factor.

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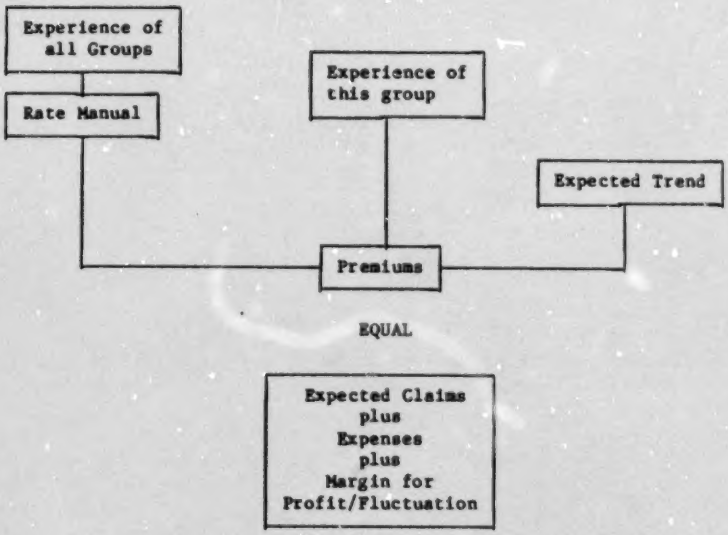
Exhibit 3-4

Factors Influencing Premiums in Insured Plans



Relationship to demographic characteristics:

Rate manual links to demographics.

Experience of this group links to implied demographics.

Premium may cover one employer or many -

Pooling of claims combine experience on larger claims for different employers.

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Where the employer is paying premiums, examining costs by age requires understanding the process which the insurance company uses to develop premiums. Where the employer is paying the cost of the claims, understanding costs by age requires knowledge of claim experience. The insurance carrier typically builds a rate manual which is based on a number of factors including demographic composition of the employer group, different benefit patterns, and geographic variations. The rate manual is used for new groups with no prior experience, and to help with changes in benefit patterns. Once a group has actual past experience, the experience will be given more weight than the manual if the group is large enough. If the group is too small, the group will be combined with other groups in order to get adequate experience. Larger groups may choose not to combine, or to combine only very large claims. This is called pooling.

Where the employer is paying for the claims directly, normally the actual claim experience is the most important variable in estimating future claim experience. Actuarial data is used by insurance companies and by outside actuaries who are providing consulting services to estimate future claims. The rate manual approach is one method used to evaluate the cost of expected plan changes. Another method is to develop a model of the expected illnesses in the population using data on frequency by DRG's and develop expected claim costs in that way. The rate manual and an analysis of historical experience are the commonly used approaches. The DRG based models may come into much more common use in the future.

In both the premium rate development and expected overall claims development situations, there is underlying variation by age. The underlying variation by age, however, may not explicitly surface in either the analysis of experience or in the development of the expected claims for the coming year. The data is often not analyzed by age. Instead, it is analyzed by type of expense, geographic location or cost center, employee versus dependent, length of hospital stay, DRG, et cetera. Age is not considered explicitly, but there is an implicit assumption that the age distribution will not shift. We have provided some data in this paper which provides an approach to estimating the underlying cost by age. This data is based on certain limited published sources as will be later cited and has not been tested over a wide range of different plan designs, in different time periods, and geographic situations.

Exhibit 3–3 shows the factors which are likely to influence overall claim costs for a group. Some of these are changing as new forms of health care delivery financing are emerging, and as providers are making different arrangements with employers.

Plan design is a key factor influencing overall costs. Plan design can encourage either in or out of hospital care and can affect the total bill for health care as well as the allocation between the benefit plan and the employee. Data to show how the cost variations by age are influenced by plan designs is not currently available. The new DRG based costing models open the door for research in this area. They also open the way to see if the expected distribution of claims is different for different age groups.

The *method of provider payment* will also influence the cost to the employer. In the HMO case, the provider is paid on a per capita basis; in other cases the provider is traditionally paid on a fee for service

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basis. DRG's are now being used for medicare, and their use in the private third party payment sector may also develop over time. It is too early to determine how and whether this might affect the cost by age. However, it should be noted that the payment of medicare benefits at less than a full share of the hospital costs shifts costs to employers, and depending on how the hospital allocates these costs in its fee structure, this could affect the costs by age.

Costs can be shared with employees through employee contributions, deductibles, coinsurance and exclusion of certain types of expenses from coverage. Contributions share costs with all employees whereas deductibles and coinsurance shift costs to those who have claims. Contributions, if substantial, may encourage employees whose spouses already have coverage to decline to participate in the plan.

The specific illnesses in an employer's work force are a key factor affecting claim costs; the illnesses in a given time period are a function of the size and characteristics of the covered group, statistical fluctuations, the type of occupations, environmental problems, etc. Given a set of illnesses, the claim costs are also a function of what health care providers are chosen, and what specific care they choose to render.

This paper deals with the issue of cost variations by age. A related public policy issue, however, is how to control health care costs. Exhibit 3–4 shows that expected claims depend on many different factors. These factors are likely to vary by employer, and many of them can be influenced by employer action. An employer interested in managing health care costs can design a multifaceted approach which will probably include the following types of activities:

—Plan design to encourage effective utilization of health care facilities and least costly alternatives.
—Consumer education for employees on use of the health care system and possibly also on wellness.
—Cost sharing with employees.
—Utilization review to ensure that employees are not misutilizing costly services.
—Administrative controls and audits to ensure that claims are paid in accordance with plan provisions.
—A data analysis system to allow identification of where funds are spent, of problem providers, and of likely excess utilization.
—Risk sharing with health care providers.
—Price negotiation with health care providers.

Comprehensive approaches to health care cost management are becoming quite common.

The cost of claims is the critical factor affecting employer payment for health care, whether the form of payment is direct payment of claims or payment of premiums to an insurance carrier. Age is often not obvious as a factor in the determination of the cost. Nevertheless, claim costs do vary by age, so that there are real differences in cost by age. Therefore, an approach will be taken to attributing costs to different ages. This will be discussed in section 4.1 of this paper.

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3.2 LIFE INSURANCE

Life insurance benefits are usually insured, because life insurance proceeds are taxed more favorably to the beneficiary than death benefits paid directly by the employer. The insurance may involve experience rating so that the employer actually assumes much of the risk.

The types of insurance available provide options for the management of cash flow. The cost of the insurance to the employer is usually stated as a rate per thousand for the entire employee group. This rate is developed by looking at the amount of insurance needed at each age, and applying a cost per $1,000 based on the mortality rate at the specific age. The expected cost is adjusted for administrative expense and the actual past experience of the employee group.

Voluntary life insurance provides additional amounts to employees on an optional basis. Voluntary life insurance is nearly always based on premiums which vary by age. This is critical since the employee can buy life insurance on the open market and the rates for term insurance for younger persons are very low.

3.3 DISABILITY

Disability benefits may be provided as insured or self-insured benefits.

Disability costs also vary by age. Since disability benefits run to a maximum age, the potential period of payment decreases with increasing age. The rates of disability increase with increased age. The total cost of disability benefits is estimated in the Chamber of Commerce study as 0.6 percent of payroll. The shorter potential benefit period and higher incidence rates are offsetting, so that the variation of disability cost by age is not a major factor in cost differences by age. Disability as defined here excludes the cost of job related injury which is covered by worker's compensation.

Disability costs are not a major factor in the compensation package. Disability will not be considered in sections 4 and 5, or in the compensation package examples in the appendix.

However, it should be pointed out that long-term disability benefits cannot be offered on a viable basis to persons beyond usual retirement ages. Eligibility for disability benefits under most definitions of disability is partly subjective and claims experience is a function of motivation as well as physical condition. If long-term disability benefits are available after retirement ages, the plan can often be used as a retirement plan with marked increases in costs.

3.4 PENSIONS

Retirement benefits are of two general types. Some plans provide for a defined contribution, or a contribution stated usually as a percentage of pay for each employee. These plans have the same cost regardless of the employee age. The one exception to this rule is that employees below or above certain ages may be excluded. Under ADEA, employees having a defined contribution plan only may be excluded from further contributions after age 65. Under ERISA, all employees may be excluded before age 25.

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Other plans provide for a defined benefit, or a benefit which is stated as a formula usually based on years of service, and often based on pay. The cost for such plans is generally calculated using the entire group and its experience, and no cost is generated on an individual employee basis. As a matter of interpretation, one could decide that costs are a level percentage of pay for all employees, or one could try to look behind the costs and develop some measure by age. This section of the paper discusses the issues related to benefit accrual and how employers pay for benefits. Section 4.3 attributes costs to age.

In the case of life, disability, and health insurance, each year can be treated as a separate time period. The employee either does or does not have claims in the year, and there is an identifiable annual cost which can be attributed to the age of the employee. However, as previously explained, individual claims experience of employees is not necessarily the basis for development of employer costs for such benefit plans.

In contrast, for defined benefit pension plans, the employee works for a long period of time and then gets a benefit during another period of time. There is a single pension fund to pay benefits for all covered employees. The fund is not allocated to individuals. The contributions to the fund are determined using one of several actuarial cost methods. The choice of method is a financial decision. Current contributions depend on many factors not related to the current employee population. For example, the assets already in the fund are an important factor in current and future contributions needed. Benefits are paid out over the future lifetimes of employees, and contributions are made over long periods of time. The cost methods which are acceptable provide flexibility in spreading the cost, and in fitting the plan to the financial needs of the employer sponsoring the plan.

This paper will not deal with specifics of the different methods. They are not viewed as an appropriate way to attribute costs.

There are various benefit formulas which assign the benefit earned at retirement to different time periods. The actual year-by-year accrual of benefits is also viewed as arbitrary and a function of the type of benefit formula chosen. This is not viewed as an appropriate way to attribute costs because it is arbitrary and based on the benefit formula as will be shown below. An examination of the accrual provides some insights which will be useful in understanding how benefits accrue and issues related to cost of employment and age.

Benefit accruals will be reviewed under three different formulas:

A flat dollar amount for each year of service.

A percentage of current year earnings for each year with a periodic recalculation of benefits to bring them up to levels consistent with current price levels—career average plan.

A percentage of final average earnings for each year of service.

Exhibits 3–5, 3–6, and 3–7 and charts 10, 11, and 12 show the development of these benefits on a year-by-year basis. These plans are simplified and not realistic in that there is no Social Security integration.

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Exhibit 3-5
Illustration of Benefits Earned in Each Year
Flat Dollar Plan - Employee Hired At Age 30

Initial Benefit Level is $10.00 Per Month Per Year of Service
Benefit is Improved for All Service Every Three years by One Dollar Per Month

Year	Benefit/Year of Service (Monthly)	Projected Ben at Age 65 (Annual)	Accrued Benefit (Annual)	Additional Benefit Earned (Annual)	Split of Additional Benefit: Earned Service (Annual)	Split of Additional Benefit: Plan Improvement (Annual)
1	$10.00	$4,200	$ 120	$120	$120	$ 0
2	10.00	4,200	240	120	120	0
3	10.00	4,200	350	120	120	0
4	11.00	4,620	528	168	132	36
5	11.00	4,620	660	132	132	0
6	11.00	4,620	792	132	132	0
7	12.00	5,040	1,008	216	144	72
8	12.00	5,040	1,152	144	144	0
9	12.00	5,040	1,296	144	144	0
10	13.00	5,460	1,560	264	156	108
11	13.00	5,460	1,716	156	156	0
12	13.00	5,460	1,872	156	156	0
13	14.00	5,880	2,184	312	168	144
14	14.00	5,880	2,352	168	168	0
15	14.00	5,880	2,520	168	168	0
16	15.00	6,300	2,880	360	180	180
17	15.00	6,300	3,060	180	180	0
18	15.00	6,300	3,240	180	180	0
19	16.00	6,720	3,648	408	192	216
20	16.00	6,720	3,840	192	192	0
21	16.00	6,720	4,032	192	192	0
22	17.00	7,140	4,488	456	204	252
23	17.00	7,140	4,592	294	204	0
24	17.00	7,140	4,896	294	204	0
25	18.00	7,560	5,400	592	216	288
26	18.00	7,560	5,616	216	216	0
27	18.00	7,560	5,832	216	216	0
28	19.00	7,980	6,384	552	228	324
29	19.00	7,980	6,612	228	228	0
30	19.00	7,980	6,840	228	228	0
31	20.00	8,400	7,440	699	240	360
32	20.00	8,400	7,680	249	240	0
33	20.00	8,400	7,920	249	240	0
34	21.00	8,820	8,568	648	252	396
35	21.00	8,820	8,820	252	252	0

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Exhibit 3-6

Illustration Of Benefits Earned In Each Year

Career Average Plan - Employee Hired at Age 30

Benefit Level is 1.25% for Each Year of Service
Benefit is Improved for All Service Every Three Years by Recalculating Benefit
Recalculated Benefit is 1.25% of Average Pay Multiplied by Service
Average Pay is the Average of the Last Three Years Pay
Pay is Assumed to Increase 5% Each Year

Year	Annual Salary	Benefit Earned in Year of Service	3 Year Average Pay	Recalculated Benefit on Update	Accrued Benefit	Additional Benefit Earned	Split of Additional Benefit: Earned Service	Split of Additional Benefit: Plan Improvement
1	$18,000	$ 225.00			$ 225	$ 225	$ 225	
2	18,900	236.25			461	236	236	
3	19,845	248.06			709	248	248	
4	20,937	260.47	$ 8,915	$ 709	980	260	260	
5	21,879	273.49	19,861	N/A	1,243	273	273	
6	22,973	287.16	20,950	N/A	1,530	298	298	
7	24,122	301.52	21,896	1,642	1,944	413	302	$ 112
8	25,328	316.60	22,991	N/A	2,250	317	317	
9	26,594	332.43	24,141	N/A	2,593	332	332	
10	27,924	349.05	25,348	2,852	3,201	508	349	259
11	29,320	366.50	26,615	N/A	3,567	367	367	
12	30,786	384.83	27,946	N/A	3,952	395	395	
13	32,325	404.07	29,343	4,402	4,806	954	404	449
14	33,942	424.27	30,911	N/A	5,230	424	424	
15	35,639	445.48	32,351	N/A	5,674	445	445	
16	37,421	467.76	33,969	6,369	5,938	1,162	468	694
17	39,292	491.15	35,667	N/A	7,328	491	491	
18	41,256	515.79	37,450	N/A	7,944	516	516	
19	43,319	541.49	39,323	8,848	9,389	1,545	541	1,004
20	45,485	568.56	41,289	N/A	9,958	569	569	
21	47,759	596.99	43,354	N/A	10,555	598	597	
22	50,147	626.84	45,521	11,949	12,576	2,021	627	1,395
23	52,655	658.18	47,797	N/A	13,234	658	658	
24	55,287	691.09	50,187	N/A	13,925	691	691	
25	58,052	725.65	52,696	15,809	16,353	2,609	726	1,884
26	60,954	761.93	55,331	N/A	17,297	762	762	
27	64,002	800.03	48,098	N/A	18,097	800	800	
28	67,202	840.03	61,003	20,588	21,428	3,332	840	2,492
29	70,562	882.03	64,053	N/A	22,310	882	882	
30	74,090	926.13	67,256	N/A	23,237	926	926	
31	77,795	972.44	70,618	26,482	27,454	4,218	972	3,246
32	81,685	1,021.06	74,149	N/A	29,475	1,021	1,021	
33	85,769	1,072.11	77,857	N/A	29,547	1,072	1,072	
34	90,057	1,125.72	81,750	33,722	34,948	5,300	1,126	4,174
35	94,560	1,182.00	95,837	N/A	36,029	1,182	1,182	

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Exhibit 3-7
Illustration Of Benefits Earned In Each Year
Final Average Pay Plan - Employee Hired at Age 30

Benefit Level is 1.25% times 5 Year Final Average Pay for Each Year of Service
Pay is Assumed to Increase 5% Each Year

Year	Annual Salary	5 Year Average Pay	Projected Benefit At Age 65	Accrued Benefit	Additional Benefit Earned	Split of Additional Benefit: Earned Service	Split of Additional Benefit: Effect of Increase in Final Average Pay
1	$18,000						
2	18,900	$18,000	$35,822	$ 450	$ 450		
3	19,845	18,450	35,822	692	242	$225	$ 17
4	20,937	18,915	35,822	946	254	231	23
5	21,879	19,396	35,822	1,212	266	236	30
6	22,973	19,892	35,822	1,492	280	242	37
7	24,122	20,887	35,822	1,929	336	249	98
8	25,328	21,931	35,822	2,193	336	261	104
9	26,594	23,029	35,822	2,591	398	274	123
10	27,924	24,179	35,822	3,022	432	288	144
11	29,320	25,388	35,822	3,491	469	302	166
12	30,786	26,658	35,822	3,999	508	317	190
13	32,325	27,990	35,822	4,548	550	33	217
14	33,942	29,390	35,822	5,143	595	350	245
15	35,639	30,859	35,822	5,786	643	367	276
16	37,421	32,402	35,822	6,480	694	386	309
17	39,292	35,023	35,822	7,230	749	405	344
18	41,256	35,724	35,822	8,038	808	425	393
19	43,319	37,510	35,822	8,909	871	447	434
20	45,485	39,385	35,822	9,845	938	469	469
21	47,759	41,355	35,822	10,856	1,009	492	517
22	50,147	43,422	35,822	11,941	1,086	517	569
23	52,655	45,593	35,822	13,108	1,167	543	624
24	55,287	47,873	35,822	14,352	1,254	570	684
25	58,052	50,257	35,822	15,708	1,346	598	748
26	60,954	52,780	35,822	17,154	1,445	628	817
27	64,002	56,419	35,822	18,704	1,550	660	891
28	67,202	58,190	35,822	20,357	1,663	693	970
29	70,562	61,100	35,822	22,149	1,782	727	1,055
30	74,090	64,155	35,822	24,058	1,989	764	1,146
31	77,795	67,362	35,822	25,103	2,045	802	1,243
32	81,685	70,730	35,822	28,292	2,189	842	1,347
33	85,769	74,267	35,822	30,634	2,343	884	1,459
34	90,057	77,980	35,822	33,142	2,507	928	1,578
35	94,560	81,879	35,822	35,822	2,681	975	1,706

Note: Accrued Benefit is benefit which would be available if employment terminated and is based on pay and service to date. Projected benefit assumes future pay increases and completion of 35 years of service.

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CHART 10

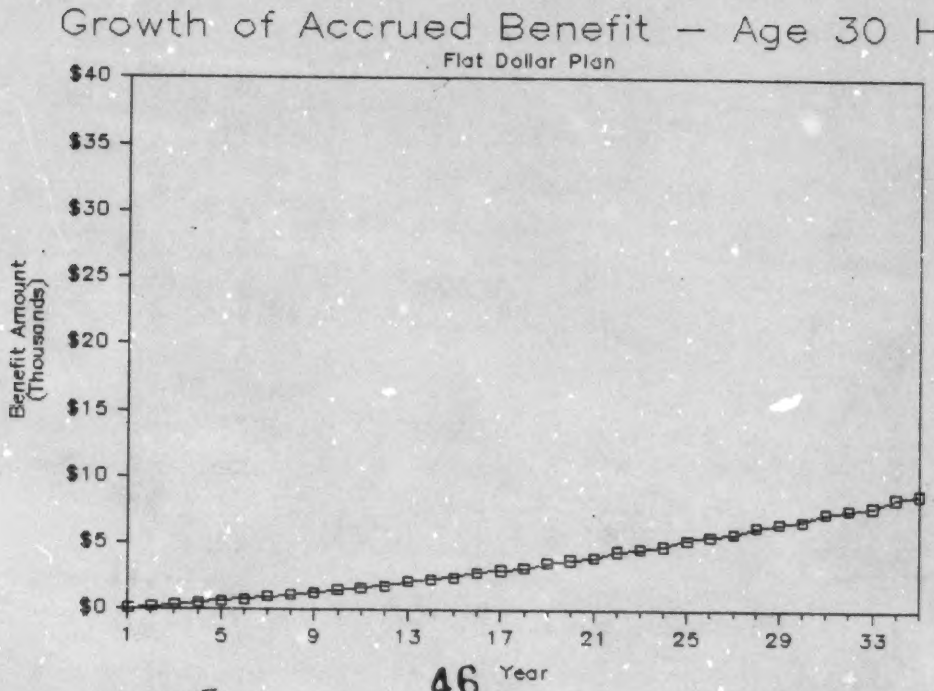

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CHART 11

Growth of Accrued Benefit — Age 30 Hire

Career Average Pay Plan

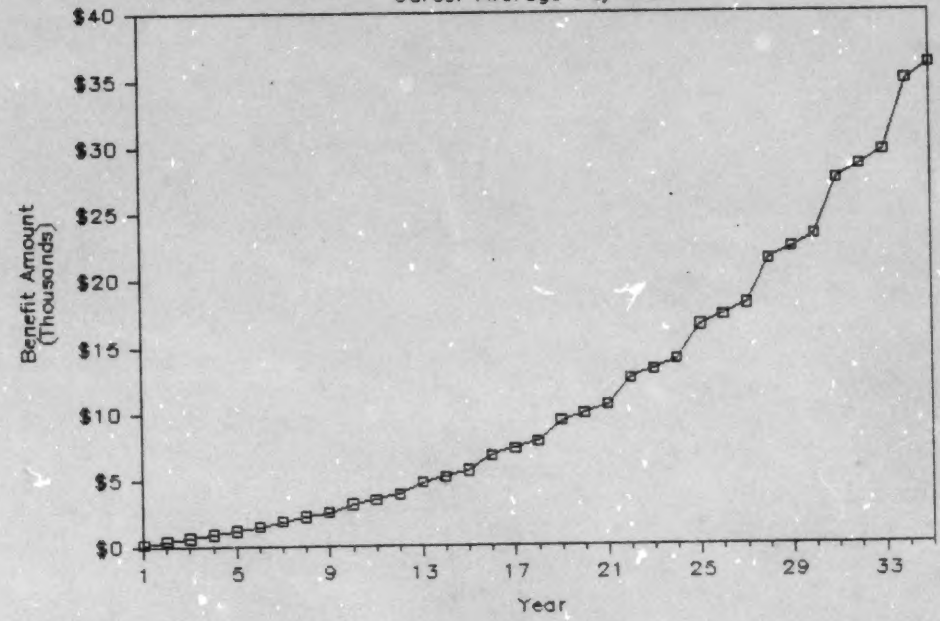

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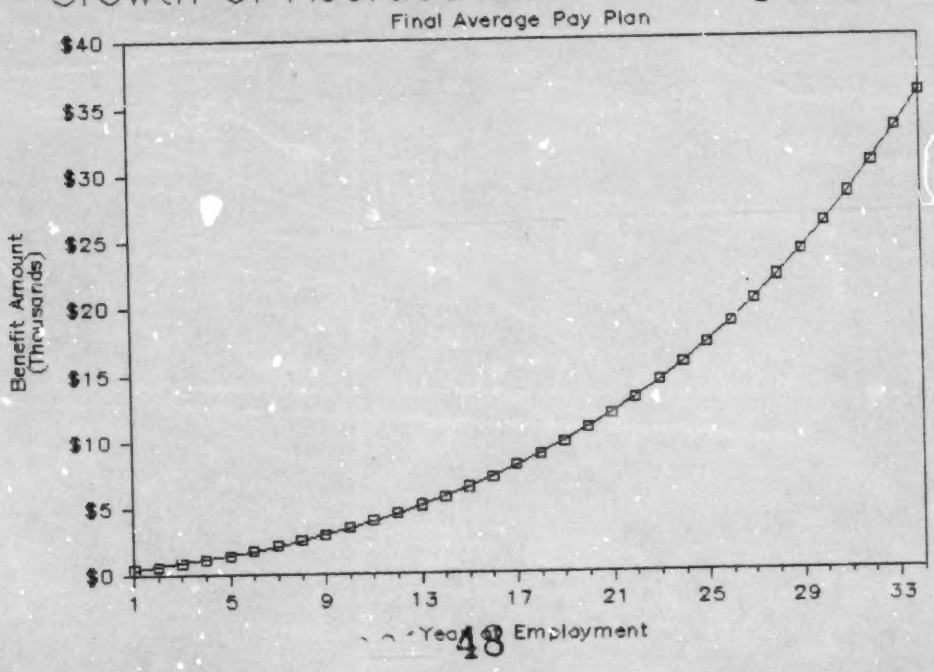
CHART 12

Growth of Accrued Benefit — Age 30 Hire



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The flat dollar plan has benefits improved periodically—for our example, every third year.

The career average pay plan has similar characteristics, except that the annual benefit covered is tied to pay, rather than being stated as a flat dollar amount. Benefits are also improved every 3 years.

The final average pay plan has benefits based on service, the formula and on pay. The pay most often used is an average of the last 5 or highest consecutive 5 years. Each year the benefit increase is partly the result of additional service and partly the result of additional pay. Assigning the full benefit increase to the year does not seem logical.

The data demonstrates that there is some difficulty and arbitrariness about assigning parts of the total pension benefit to particular years of service. The difficulty arises because the increase in the accrued benefit each year links to 1 more year of service, plan changes, pay and pay interacting with prior service. A change in a flat dollar plan is implictly linked to a pay level change, although this is never stated. These interact differently in different plans. An employer who wants to pay the same benefits at retirement may do so in many different ways. The route used will not affect people who stay to retirement, but will affect people who leave at earlier ages.

The factors which affect the real long-term pension cost include:

—The amount of benefit earned in a given year.

—The period from the time the benefit is earned until retirement (or some other event which triggers a benefit payment).

—The interest which can be earned until the benefit is paid.

—The chance that the benefit will be lost due to termination of employment before benefits are vested, or death before death benefits are payable.

—The chance that the benefit will be paid at various times.

Higher age employees can be viewed as having higher costs because of the shorter time for the money to earn interest, and the smaller probability of death or termination. This type of difference in cost is age related in a way that is comparable to the way costs of life insurance, disability, and health insurance are age related.

In section 4.3, costs by age will be developed using attribution factors and time to retirement. Benefit accrual differences will not be considered age related.

The approach which will be used to attribute costs to age is equally valid for employees hired at older ages and older long service employees.

If benefits accrued are greater in early years of employment, then employees hired at older ages earn relatively greater benefits and have higher costs. For example, if a plan provides 2 percent of pay each year for the first 20 years and 1 percent of pay thereafter for the next 15 years, an employee hired at 50 will have all service at the 2 percent accrual rate, whereas an employee hired at age 30 will have 20 years at 2 perent and 15 years at 1 percent. Such differences in accrual rates are plan specific, and will not be recognized in the cost attribution method.

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Section 4

EMPLOYEE BENEFITS—ATTRIBUTION OF BENEFIT COSTS BY AGE

As indicated in section 3, employee benefit costs are generally described in terms that represent averages over an entire employee population. However, underlying the costs is experience which varies with the actual demographics.

The purpose of section 4 is to look behind these averages to see what the expected claim costs by age might be. Overall, the expected claim benefit costs are higher for older employees. In this section, we will discuss costs separately for life insurance, health insurance and pensions. Each presents some different issues.

4.1 MEDICAL AND DENTAL BENEFITS

Historically, the cost of employee benefits was not an issue which attracted top management attention. Cost allocation by employee groups was often done on an average basis, or total claims were allocated directly to locations.

However, in recent years, there has been a major shift in thinking concerning the importance of benefit costs and their allocation. Health care costs today are over 10 percent of gross national product and increases in health care costs have had a major impact on profits for some businesses. The TEFRA change requiring the employer plan to pay health benefits before medicare would pay for employees age 65–69 focused attention on older employees and health insurance.

Since 1980, many employers have restructured health benefit plans to move away from first-dollar coverage to encourage employees to act as good consumers, and to create incentives for out-of-hospital care. Some employers have become proactive in communicating on health issues and in trying to influence the health care system.

Various methods for financing health benefits are available, as described in section 3.

Historically, group claim data has been analyzed largely from an overall viewpoint. This is shifting with a new focus on where dollars are being spent and with a lot of comparison of utilization to normative data. *While these analyses are not usually age focused*, it is expected that more age-related data will become available.

As indicated in section 3, claim costs are critical to cost regardless of the health care financing arrangements. We will develop factors for relative costs by age using available data.

For medical insurance, the claim data is still usually not maintained by age in group plans, so that claim costs are not directly developed by age. Younger employees tend to have more children if they have dependents, and also to have maternity claims. On an individual basis,

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it is clear that claim costs increase by age. There is also a problem with respect to the handling of ages 65–69. Past experience would not be valid because medicare was primary for these individuals, whereas since January 1, 1983, the employer's plan is primary. It is suggested that the following index numbers are appropriate for attributing claim costs by age. Age 45–49 has been set equal to 100 percent.

Age:	*Index number (percent)*
Under 45	80.0
45 to 49	100.0
50 to 54	112.5
55 to 59	125.0
60 to 64	160.0
65 to 69	225.0

These index numbers were developed from HMO experience for families covered by group contracts as published by Hutchings and Ullman in the Transactions of the Society of Actuaries in 1983. Exhibit 4–1 shows the data published by Hutchings and Ullman. *The age 65–69 data was estimated.* The ratios below age 65 were confirmed by reviewing experience on individually underwritten hospital and major medical policies as published in the "1981 Reports Number of the Transactions of the Society of Actuaries." This experience covers 1977 and 1978, and confirms the general pattern.

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Exhibit 4-1

HMO Claim Cost per Contract Year

Inpatient and Outpatient Combined

(New York Blue Cross Blue Shield Experience for 1978)

Age Group	Individual Male	Individual Female	Family
20-29	$112.30	$169.02	$524.53
30-39	$153.23	$240.02	$516.12
40-44	$216.70	$312.29	$540.92
45-49	$301.19	$374.90	$652.07
50-54	$448.55	$400.79	$761.82
55-59	$456.99	$473.29	$844.91
60-64	$725.11	$587.43	$1,079.24
Average	$213.15	$326.49	$667.94

Ratios of Claim Costs to Average

Age Group	Individual Male	Individual Female	Family
20-29	52.7%	51.8%	78.5%
30-39	71.9%	73.5%	77.3%
40-44	101.7%	95.6%	81.0%
45-49	141.3%	114.8%	97.6%
50-54	210.4%	122.8%	114.1%
55-59	214.4%	145.0%	126.5%
60-64	340.2%	179.9%	161.6%

Source: Hutchings and Ullman, Prepared Hospital Care Age/Sex and Hospital Continuation Study - to be published in the 1983 Transactions of the Society of Actuaries.

Note: The claim levels are very much below current claim costs but this is the most recent data on costs by age within the working population age span.

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If we use these index numbers, we can then get claims costs by age if we assume different level of average claim costs for different plans. These costs are as follows:

Age	Average Claims for Total Group			
Group	$1,600	$2,000	$2,400	$2,800
Under 45	1,280	1,600	1,920	2,240
45-49	1,600	2,000	2,400	2,800
50-54	1,800	2,240	2,700	3,150
60-64	2,560	3,200	3,840	4,480
65-69	3,600	4,500	5,400	6,300

The average claim costs are the per employee cost, and so they represent the cost of the employer-supported care for dependents allocated per employee combined with cost for the employee. These costs are based on the attribution factors developed earlier.

If a plan is contributory, the employee contribution is the same regardless of age, and so the variation that in the employer's share of the cost becomes more substantial. For example, assume the average cost for all employees is $2,000 and the employee pays $400. The total cost attributable to an employee under 45 is $1,600, and so the employer cost is $1,600 —$400, or $1,200. The total cost attributable to an age 60 employee is $3,200, leaving an employer cost of $2,800. The data below shows what could happen if the employee pays 20 percent of the average cost.

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	Average Employer Claims for Contributory Plan			
Average Total Claims per Employee	$1,600	$2,000	$2,400	$2,800
Employee Contribution at 20%	$ 320	$ 400	$ 480	$ 560
Employer Cost	$1,280	$1,600	$1,920	$2,240
Employer Cost by Age Group				
Under 45	$ 960	$1,200	$1,440	$1,680
45-49	1,280	1,600	1,920	2,240
50-54	1,480	1,850	2,220	2,590
60-64	2,240	2,800	3,360	3,820
65-69	3,280	4,100	4,920	5,740

For employers *with high cost health plans*, the medical care cost for older employees is a substantial burden. Those with employees 65–69 have already isolated and considered this cost because it was called to their attention by TEFRA. While medical benefits may be worth about 5 percent of pay overall, for lower paid older workers this percentage could be 20 to 30 percent of pay. This is particularly true if the employer offers medical benefits to employees who work on reduced schedules. Some employers offer medical coverage to employees who work 20, 25, or 30 hours per week. Older persons are one of the groups who prefer such schedules. Department stores, banks, food service establishments, and hospitals are examples of employers who have significant numbers of employees with reduced work schedules.

The employer may have a choice in filling these jobs with teenagers, housewives who need work on limited schedules, and older persons. The older person could provide advantages in terms of lower turnover, lower absenteeism, and greater attention to the job, but could also be a real disadvantage in terms of cost of medical benefits. But, of course, if medical benefits are not offered, this cost is eliminated.

It is very likely that employers will pay much more attention to health care costs by age in the future than has been paid to it in the past.

Where employees pay for part of their health care, the employee payment does not—and cannot under existing laws—vary by age. The employer cost varies by age more than employee cost.

Historically, health care providers have charged fee for service or if the service is provided through an HMO, a per capita charge. A shift is occurring at the present time, with medicare having adopted a system of reimbursement for in-hospital services based on flat amounts per diagnostic related groupings or DRG's. Some people believe that the DRG concept will be extended to much health care pro-

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vided to employees. Under the DRG concept, the risk of health care costs exceeding averages for the DRG shifts in part to the hospital. Age is a factor in some cases in the assignment of a specific case to a DRG. The use of DRG's may influence the pattern of health care costs by age, but it is too early to tell what effect it will have.

Key Points and Policy Implications

Health care costs rise with age. Data on the pattern by age is limited, and it is not clear what factors influence that pattern.

For low-paid employees, health care is a substantial part of the total compensation package, particularly for older workers.

Currently, law creates a significant health benefit cost for employers hiring workers at age 65–69. The long-term magnitude of this cost is not known at this time.

TEFRA has made this issue much more visible.

Health care costs may influence future employer decisions about hiring older workers, particularly on reduced schedules.

4.2 LIFE INSURANCE

For life insurance, we can judge the cost difference by age by looking at the morality rates. The following is the cost as a percentage of pay for a life insurance benefit of one times pay assuming that mortality rates follow the 1960 basic group table. This table has somewhat higher mortality rates than recent experience. The rates are as follows:

Age:	*Cost of death benefit (percent)*
33	0.1
38	0.2
43	0.3
48	0.6
53	1.0
58	1.5
63	2.3

Life insurance amounts typically range up to three times pay provided by the employer. Many employers offer a basic amount and then require the employee to pay for the additional amount. Age bracket employee contributions are often used for the voluntary amounts.

4.3 PENSION COST ATTRIBUTION BY AGE

For purposes of the cost of the benefit package by age, we will assume that the pension cost attribution in a defined plan consists of components which are age related and components which are not age related. Components which tie into the benefit formula and the pattern of benefit accrual will be considered as not age related, since these factors are a function of arbitrary decisions with respect to plan design. However, differences in the cost which arise from the shorter time to retirement, the shorter period of interest earnings, and the shorter period in which the individual may die will be assumed to be age related. This will enable us to develop factors by age which can be applied to the average

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cost plan in order to develop relative costs of benefits by age. The plan cost will be the current contribution rate as a percentage of pay. This method is consistent with the handling of health benefit costs.

The factors shown in exhibit 4–2 are developed by getting an annuity factor for $1 of life annuity payable starting at age 65, and then getting the ratio of the annuity at the specific age to the annuity at age 45. The factor measures how much more or less is needed at the specific age than at age 45. For example, a deposit of $1.85 each for a large group all age 45 will earn interest at 7½ percent so it will grow to an amount large enough to pay $1 per year starting at age 65 for all those who are still alive. Payments continue to death. The corresponding deposit needed at 50 is $2.69. The factor for 50 is 125.4 percent or $2.69 divided by $1.85. The 50-year-olds must pay 25 percent more to get the annuity to make up for the loss of interest from age 45–50 and to make up for the fact that the number dying from age 45 to age 65 is greater than the number dying from age 50 to age 65. Those who die before 65 get no benefit.

The calculations shown in exhibit 4–2 are based on an assumption of age 65 normal retirement and actuarial reduction for retirement before age 65. The same method could be applied for other retirement years.

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Exhibit 4-2

Pension Cost Factors
Relative Cost of Pensions at Various Ages
Measures Cost per $1 of Life Annuity Starting at Age 65 or Current Age if Later
Costs Based on 7-1/2% and the 1983 Group Annuity Table (Male Values)

Age	Annuity Factor	Cost as % of Age 47 Cost	Increase By Age	Age	Annuity Factor	Cost as % of Age 47 Cost	Increase By Age
20	0.2963	13.8%	1.1%	46	1.9878	92.8%	6.7%
21	0.3187	14.9%	1.1%	47	2.1422	100.0%	7.2%
22	0.3427	16.0%	1.2%	48	2.3093	107.8%	7.8%
23	0.3686	17.2%	1.3%	49	2.4903	116.3%	8.5%
24	0.3964	18.5%	1.4%	50	2.6865	125.4%	9.1%
25	0.4263	19.9%	1.5%	51	2.8993	135.3%	9.9%
26	0.4585	21.4%	1.6%	52	3.1303	146.1%	10.8%
27	0.4931	23.0%	1.8%	53	3.3811	157.8%	11.7%
28	0.5304	24.8%	1.8%	54	3.6537	170.6%	12.8%
29	0.5704	26.6%	2.0%	55	3.9501	184.4%	13.8%
30	0.6136	28.6%	2.1%	56	4.2726	199.5%	15.1%
31	0.6600	30.8%	2.2%	57	4.6236	215.8%	16.3%
32	0.7100	33.1%	2.3%	58	5.0061	233.7%	17.9%
33	0.7637	35.7%	2.6%	59	5.4234	253.2%	19.5%
34	0.8216	38.4%	2.7%	60	5.8795	274.5%	21.3%
35	0.8839	41.3%	2.7%	61	6.3783	297.8%	23.3%
36	0.9510	44.4%	3.3%	62	6.9270	323.4%	25.6%
37	1.0233	47.8%	3.5%	63	7.5303	351.5%	28.1%
38	1.1011	51.4%	3.6%	64	8.1967	382.6%	31.1%
39	1.1849	55.3%	3.9%	65	8.9353	417.1%	34.5%
40	1.2752	59.5%	4.2%	66	8.7078	406.5%	(10.6%)
41	1.3726	64.1%	4.6%	67	8.4773	395.7%	(11.8%)
42	1.4775	69.0%	4.9%	68	8.2449	384.9%	(10.8%)
43	1.5908	74.3%	5.3%	69	8.0109	374.0%	(10.9%)
44	1.7130	80.0%	5.7%	70	7.7754	363.0%	(11.0%)
45	1.8451	86.1%	6.1%				

Note: Age 47 used to represent Age 45-49 age group. Increase by Age measures the percentage change from the prior age to the current age. For ages 65-69, annuities are assumed to be paid immediately so the cost reduces by age to reflect the shorter life expectancy as age increases.

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Section 5

COST OF COMPENSATION PACKAGE

In this section, we will present an approach for combining the age related costs which are part of the compensation package and showing costs by age for a number of different compensation packages.

5.1 APPROACH TO DEVELOPING COSTS BY AGE

In this section, the costs developed earlier in this paper will be combined together to develop costs of compensation packages. The basic approach will be to assume that the cost of direct pay is not age related, but that specific benefit costs are age related. These benefit costs will be added to direct pay to get index numbers by age.

For convenience we have assumed that age bracket 45–49 should have an index number of 100 percent. The benefits which are used as having significant age related costs are defined benefit pension plans, medical insurance and life insurance. The factors developed in section 4 are used to develop age related costs for the total compensation package. Pension cost variations reflect only variations due to a different period of time to earn investment income and different exposure to mortality before retirement. We have assumed that differences related to the pattern of benefit accrual are not related to age.

The calculation basis is as follows:

—We have used three pay levels: $10,000, $25,000, and $50,000.

—Employees are grouped into 5-year age groups.

—For medical insurance, an average cost per employee is assumed, and relative value as the health benefit at different ages is used to translate this amount into an age cost. If the plan is paid for partly by employees, the amount paid by employees is deducted after the amount is translated into an age based cost.

—Calculations are shown for employers with high and low medical care costs overall. The differences in average cost per employee reflect whether it is a generous or low cost plan, geography, and the demographics of the group. They also reflect the quality of administration. However, it is assumed that none of these factors affect the relative cost by age. The total annual employer cost per employee is $1,600 for the low cost plan and $2,800 for the higher cost plan. Employee contributions listed are zero and $600 per year for the $1,600 plan, and zero, $600, and $1,200 for the $2,800 plan.

—For life insurance, mortality costs are used. The compensation package includes two times pay as the life insurance amount. Life insurance is not a major factor so no variations are tested.

—For pensions, the plan is not looked at, but rather the employer is categorized by total defined benefit contribution as a percentage of pay, and it is assumed that this amount can be attributed to employees as a different amount by age. Defined contribution plan contributions do not vary by age. This method assumes that

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the overall contribution sets the cost level and that the factors are appropriate as a way to attribute them to age. Defined benefit plans are tested at 2 percent, 5 percent, and 10 percent of pay. Defined contribution plans are tested at 5 percent and 10 percent of pay.

—Disability benefits have been excluded from the analysis as they are not a major item in the compensation package.

—Time off, productivity, training, turnover and other costs except direct pay which are either not related to age or can't be quantified are excluded from the analysis.

—Overall, these results show the range of cost variation by age in a variety of cases (exhibit 5-1).

Exhibit 5-1

Summary of Cost Factors by Age for Use in Costing Benefit Plans

Age Group	Medical Cost Factor as % of Average Cost	Defined Benefit Cost Factor as % of Average Cost	Life Insurance Cost as % of Pay for One Times Pay
Under 30	80.0%	23.0%	0.1%
30-34	80.0%	33.0%	0.1%
35-39	80.0%	48.0%	0.2%
40-44	80.0%	69.0%	0.3%
45-49	100.0%	100.0%	0.6%
50-54	112.5%	146.0%	1.0%
55-59	125.0%	216.0%	1.5%
60-64	160.0%	323.0%	2.3%
65-69	225.0%	*	2.3%

Note: Same life insurance cost is assumed for 65-69 as for 60-64 because it is assumed that the benefits will be reduced to equal cost; regulations allow a 30% reduction.

If benefits are not reduced, assume costs at 65-69 are about 30% higher.

Defined contribution costs are the same by age.

Pension costs are determined on the basis that retirements are at age 65 or current age is greater.

*See Section 5.3 for a discussion of pension costs at ages 65-69.

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5.2 COSTS OF VARIOUS COMPENSATION PACKAGES

The appendix includes 25 sample compensation packages and shows the costs by age groups of these sample compensation packages. Costs are also shown as a percentage of age 45–49 cost. The packages include five medical benefit plans and five retirement plans, which have been combined with base salaries of $10,000, $25,000, and $50,000. The medical and pension plans are defined in terms of their cost and type. The medical plans are as follows:

Annual cost per employee:	*Employee share of cost*
$1,600	0
$1,600	$800
$2,800	0
$2,800	600
$2,800	1,200

The retirement plans are as follows:

Defined benefit plan.—Contribution of 2 percent, 5 percent, and 10 percent by the employer.

Defined contribution plan.—Contributions of 5 percent and 10 percent by the employer.

Noncontributory life insurance of two times pay is included. Disability benefits are not included in these calculations.

Exhibit 5–2 summarizes the dollar costs of some of the compensation packages for ages 50–64. See the appendix for development of these figures and costs at all ages.

Exhibits 5–3, 5–4, and 5–5 summarize the relative costs of compensation packages analyzed for ages 50–54, 55–59, and 60–64. This data shows cost relative to cost at 45–49.

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Exhibit 5-2
Attributed Compensation Package Cost in Dollars

Medical Cost per Year	Age Range	Annual Salary Level $10,000	$25,000	$50,000
Pension Plan - Defined Benefit - 2% of Pay Overall Contribution				
$1,600	50-54	$12,292	$28,030	$54,260
$1,600	55-59	$12,732	$28,830	$55,660
$1,600	60-64	$13,666	$30,325	$58,090
$2,800	50-54	$13,642	$29,380	$55,610
$2,800	55-59	$13,232	$30,330	$57,160
$2,800	60-64	$15,586	$32,245	$60,010
Pension Plan - Defined Benefit - 5% of Pay Overall Contribution				
$1,600	50-54	$12,730	$29,125	$56,450
$1,600	55-59	$13,380	$30,450	$58,900
$1,600	60-64	$14,635	$32,748	$62,935
$2,800	50-54	$14,030	$30,475	$57,800
$2,800	55-59	$14,880	$31,950	$60,400
$2,800	60-64	$16,555	$34,668	$64,855
Pension Plan - Defined Benefit - 10% of Pay Overall Contribution				
$1,600	50-54	$13,460	$30,950	$60,100
$1,600	55-59	$14,460	$33,150	$64,300
$1,600	60-64	$16,250	$36,785	$71,010
$2,800	50-54	$14,810	$32,300	$61,450
$2,800	55-59	$15,960	$34,650	$65,800
$2,800	60-64	$18,170	$38,705	$72,930
Pension Plan - Defined Contribution - 5% of Pay				
$1,600	50-54	$12,500	$28,550	$55,300
$1,600	55-59	$12,800	$29,000	$56,000
$1,600	60-64	$13,520	$29,960	$57,360
$2,800	50-54	$13,850	$29,900	$56,650
$2,800	55-59	$14,300	$30,500	$57,500
$2,800	60-64	$15,440	$31,880	$59,280
Pension Plan - Defined Contribution - 10% of Pay				
$1,600	50-54	$13,000	$29,800	$57,800
$1,600	55-59	$13,300	$30,250	$58,500
$1,600	60-64	$14,020	$31,210	$59,860
$2,800	50-54	$14,350	$31,150	$59,150
$2,800	55-59	$14,800	$31,750	$60,000
$2,800	60-64	$15,940	$33,130	$61,780

Note: Medical Plan is paid for entirely by employer; medical cost is average for all employees. A $1,600 average cost at all ages is equivalent to a cost ranging from $1,280 to $3,600.

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Exhibit 5-3
Attributed Compensation Package Cost at Ages 50-54
as Percent of Age 45-49 Cost

Medical Cost per Year	Employee Contribution	Annual Salary Level $10,000	$25,000	$50,000
Pension Plan - Defined Benefit - 2% of Pay				
$1,600	$ 0	103.1%	102.3%	102.0%
$1,600	$ 600	103.3%	102.4%	102.0%
$2,800	$ 0	104.0%	102.7%	102.2%
$2,800	$ 600	104.2%	102.8%	102.2%
$2,800	$1,200	104.4%	102.8%	102.3%
Pension Plan - Defined Benefit - 5% of Pay				
$1,600	$ 0	104.2%	103.5%	103.2%
$1,600	$ 600	104.4%	103.5%	103.2%
$2,800	$ 0	104.9%	103.8%	103.4%
$2,800	$ 600	105.1%	103.9%	103.4%
$2,800	$1,200	105.4%	104.0%	103.5%
Pension Plan - Defined Benefit - 10% of Pay				
$1,600	$ 0	105.8%	105.3%	105.1%
$1,600	$ 600	106.1%	105.4%	105.1%
$2,800	$ 0	106.4%	105.6%	105.2%
$2,800	$ 600	106.7%	105.7%	105.3%
$2,800	$1,200	107.0%	105.8%	105.3%
Pension Plan - Defined Contribution - 5% of Pay				
$1,600	$ 0	102.3%	101.4%	101.1%
$1,600	$ 600	102.4%	101.5%	101.1%
$2,800	$ 0	103.2%	101.9%	101.3%
$2,800	$ 600	103.4%	101.9%	101.4%
$2,800	$1,200	103.5%	102.0%	101.4%
Pension Plan - Defined Contribution - 10% of Pay				
$1,600	$ 0	102.2%	101.4%	101.0%
$1,600	$ 600	102.3%	101.4%	101.1%
$2,800	$ 0	103.1%	101.8%	101.3%
$2,800	$ 600	103.2%	101.8%	101.3%
$2,800	$1,200	103.4%	101.9%	101.3%

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Exhibit 5-4
Attributed Compensation Package Cost at Ages 55-59
as Percent of Age 45-49 Cost

Medical Cost per Year	Employee Contribution	Annual Salary Level $10,000	$25,000	$50,000
Pension Plan - Defined Benefit - 2% of Pay				
$1,600	$ 0	106.8%	105.2%	104.6%
$1,600	$ 600	107.2%	105.3%	104.7%
$2,800	$ 0	108.5%	106.0%	105.1%
$2,800	$ 600	108.9%	106.2%	105.1%
$2,800	$1,200	109.3%	106.3%	105.2%
Pension Plan - Defined Benefit - 5% of Pay				
$1,600	$ 0	109.5%	108.2%	107.7%
$1,600	$ 600	110.0%	108.3%	107.8%
$2,800	$ 0	110.9%	108.9%	108.1%
$2,800	$ 600	111.4%	109.0%	108.1%
$2,800	$1,200	111.9%	109.2%	108.2%
Pension Plan - Defined Benefit - 10% of Pay				
$1,600	$ 0	113.7%	112.8%	112.4%
$1,600	$ 600	114.4%	113.0%	112.5%
$2,800	$ 0	114.7%	113.2%	112.7%
$2,800	$ 600	115.3%	113.5%	112.8%
$2,800	$1,200	116.0%	113.8%	112.9%
Pension Plan - Defined Contribution - 5% of Pay				
$1,600	$ 0	104.7%	103.0%	102.4%
$1,600	$ 600	105.0%	103.1%	102.4%
$2,800	$ 0	106.6%	103.9%	102.9%
$2,800	$ 600	106.9%	104.0%	102.9%
$2,800	$1,200	107.2%	104.1%	102.9%
Pension Plan - Defined Contribution - 10% of Pay				
$1,600	$ 0	104.6%	102.9%	101.0%
$1,600	$ 600	104.8%	103.0%	102.3%
$2,800	$ 0	106.3%	103.8%	102.7%
$2,800	$ 600	106.6%	103.8%	102.8%
$2,800	$1,200	106.9%	103.9%	102.8%

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Exhibit 5-5
Attributed Compensation Package Cost at Ages 60-64
as Percent of Age 45-49 Cost

Medical Cost per Year	Employee Contribution	Annual Salary Level $10,000	$25,000	$50,000
Pension Plan - Defined Benefit - 2% of Pay				
$1,600	$ 0	114.6%	110.7%	109.2%
$1,600	$ 600	115.4%	110.9%	109.3%
$2,800	$ 0	118.8%	112.7%	110.3%
$2,800	$ 600	119.7%	113.0%	110.4%
$2,800	$1,200	120.7%	113.1%	110.5%
Pension Plan - Defined Benefit - 5% of Pay				
$1,600	$ 0	119.8%	116.3%	115.1%
$1,600	$ 600	120.8%	116.7%	115.2%
$2,800	$ 0	123.4%	118.1%	116.0%
$2,800	$ 600	124.5%	118.5%	116.2%
$2,800	$1,200	125.7%	118.9%	116.4%
Pension Plan - Defined Benefit - 10% of Pay				
$1,600	$ 0	127.8%	125.1%	124.1%
$1,600	$ 600	129.1%	125.6%	124.4%
$2,800	$ 0	130.5%	126.5%	124.9%
$2,800	$ 600	131.9%	127.0%	125.1%
$2,800	$1,200	133.4%	127.6%	125.4%
Pension Plan - Defined Contribution - 5% of Pay				
$1,600	$ 0	110.6%	106.4%	104.9%
$1,600	$ 600	111.2%	106.6%	104.9%
$2,800	$ 0	115.1%	108.6%	106.0%
$2,800	$ 600	115.8%	108.8%	106.1%
$2,800	$1,200	116.5%	109.0%	106.2%
Pension Plan - Defined Contribution - 10% of Pay				
$1,600	$ 0	110.2%	106.2%	104.7%
$1,600	$ 600	110.7%	106.3%	104.7%
$2,800	$ 0	114.5%	108.3%	105.8%
$2,800	$ 600	115.2%	108.4%	105.8%
$2,800	$1,200	115.9%	108.6%	109.1%

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Some of the key points shown by these exhibits are as follows:

—The value of the compensation package is greater at the older ages, and this is particularly pronounced at ages 60–64. The value at 65–69 depends on how benefits are handled. This is discussed in section 5.3.

—At ages 50–54, the compensation package is worth between 101 percent and 107 percent of the value at ages 45–49. This range increases from 101 percent to 116 percent at ages 55–59 and from 105 percent to 134 percent at ages 60–64.

—There is much more variation in a package including a defined benefit plan, than in one including only defined contribution plans.

—For lower paid people, the most significant item will be the medical plan, particularly if it is a relatively generous plan.

—For higher paid people, the defined benefit plan will often become the most important element.

—The greatest variation is found in costs of defined benefit pension plans. It should be noted that the higher the rate of investment return expected, the greater will be the variation, since interest earnings are available over different time periods.

5.3 BENEFIT COSTS FOR THE OVER AGE 65 WORKER

The cost approach developed includes costs for workers who are over age 65. These are included in the appendix. They are not included in the summary tables. There are some special considerations which should be understood in order to interpret the over age 65 data. The medical care costs are estimated. No reliable data exists yet since TEFRA amendments required employer coverage to be primary only relatively recently. Using the method suggested by the authors, the per employee medical care cost at ages over 65 varies from $3,600 to $6,300. This includes the cost for dependents. Per capita medical costs over age 65 are over $4,000 per person in 1984, so that these amounts may be reasonable even though they seem to be extremely high.

Pension costs at older ages vary greatly depending on the plan design. For employers who freeze benefits at age 65, there is actually a negative cost for employees who continue working at 65–69 since they are foregoing benefits and not earning additional benefits. For employers who continue accruals, the value of the continued accrual may or may not be greater than the value of the benefit lost. In many cases, it will not be greater, so a pension cost savings results from retirement after 65. The high extreme of costs will apply in the case where the plan continues accruals and offers actuarial increases. This combination is found rarely. Two sets of costs are shown in appendix. On one basis, the cost is taken at zero for 65–69 and in the other it is calculated consistently with the younger ages. The zero cost assumes no further benefit accrual, but actuarial increases so that there is no loss of the value of the pension benefit. The high cost assumes continued accruals and actuarial increases.

Life insurance is handled on the basis of cost equalization in accordance with the ADEA Interpretations. This method is commonly used and this seems to be the approach most consistent with employer practice.

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Section 6

THE OLDER WORKER IN THE WORK FORCE—ISSUES AFFECTING THE BOTTOM LINE

This section of the paper provides an overview of factors which affect the performance of older employees. While performance level is sometimes difficult to relate directly to costs of specific workers, there is no disagreement regarding the overall costs of low performance.

Earlier, we pointed out that specific jobs require particular capabilities including physical and mental ability, education, and experience. We also mentioned that there is no evidence indicating that increasing age causes changes in productivity and that a critical issue regarding performance level is matching the individual to the job.

This section examines functional changes with age, work performance, productivity, training, and health as critical factors related to the costs of mature employees.

6.1 INTRODUCTION

In addition to direct and indirect compensation costs which may be attributable to age, employers have become concerned with the changing functional capacities, productivity, training potential, and health of older workers. While it is difficult at present to develop valid cost estimates for these variables, they nevertheless are extremely important influences on the overall costs of human resources because they affect the magnitude of productive capacity.

Beliefs that older employees are more costly in terms of compensation, employee benefits, and that they have lower productivity, have led to the view that greater incentives should be provided for early retirement. Of course these incentives can themselves be costly for employers. So far as productive capacities are concerned, there is substantial evidence indicating that older workers' productivity is hardly affected by functional changes and health limitations. Rather, many difficulties in performance attributed to age may in fact be related to deterioration of human capital over time, resulting in mismatches between jobs and workers. Therefore, costs associated with functional health or productivity changes may be attributable to age to only a limited degree if at all. Instead, it may be more appropriate to consider such costs as the opportunity costs of not offering training, education, experience with new equipment or new systems of work organization, and so forth. The changing structure of industries and occupations, intensified by technological development, will continue to require training and continuous updating of skills for greater proportion of the labor force. Training is expensive, but not training may be even more expensive. Older workers whose opportunities for training and education have traditionally been quite limited may be increasingly mis-

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matched to jobs, and therefore more costly if such opportunities are not provided in the future. These costs are not related to age but instead involve using employees who have differing amounts of human capital which can be applied to specific jobs. Thus, disadvantages of older employees in terms of productivity may be related most closely to employer human resource development policies which historically have favored younger workers. The costs of mismatches between employees and jobs far exceed those which may be related to minor functional, health, and productivity changes minimally associated with aging. Consequently, the maintenance of human capital on a long-term basis may be the most effective approach for maintaining the cost-effective utilization of older employees.

Burnout is a phenomenon which has recently attracted attention. There is no evidence to link burnout with age. However, if burnout victims are left in the work force without rehabilitation, they will gradually age to become what will be perceived of as older unproductive workers. It is important that victims of burnout be rehabilitated and matched well to new jobs.

6.2 FUNCTIONAL CHANGES AND AGING

There has been a widespread belief that the physical and mental capabilities of older workers decrease with increasing age. This view encourages the use of early retirement incentives on the assumption that less capable older employees will leave the organization earlier.

However, while there are physical changes that occur with age, they are usually insufficient to result in alterations in job perfomance. For example, sensory processes of hearing, vision, taste, touch, and smell become less acute over time but the process is extremely gradual. Numerous bodily processes—such as metabolism rate, lung capacity, kidney function, and so forth—begin to decline by age 30, again very gradually. However, research has demonstrated that age is not an accurate indicator of such physical changes due to wide individual variations. In some instances, it has been found that high speed work or continuous heavy physical demands have been more difficult for older workers but such workers were also more accurate and consistent and therefore overall productivity was hardly affected. Under today's circumstances, most jobs are well within the physical capacities of older workers and therefore the types of physical changes experienced with aging have virtually no practical effect on job capabilities. In the case of physical attributes, the most important factor is matching physical capabilities with job requirements. This approach is not related to chronological age but rather involves assessment of functional capability. Very large numbers of workers aged 45–70 are physically capable of performing most jobs in the economy.

Again, in the case of the characteristics of intelligence, memory, and learning, conventional beliefs have held that these decline with age. This view has usually resulted in seriously limiting education and training opportunities for older employees and has led to the self fulfilling prophecy that these workers are more costly becase they are technically obsolete and unfamiliar with changing equipment and methods of production. However, as with physical changes, the evidence does not indicate that intelligence, learning ability, memory or

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motivation decline with aging, or if so, not until very late in life. It is clear that vocabulary, general information, ideation, flexibility and associative skills do not decline with aging through age 65 or 70. Studies of I.Q. indicate that there is virtually no significant decline until very late in life and that for the majority of job tasks, any changes of intellectual level have no effect on performance. There is also little evidence to support the view that short-term or long-term memory declines precipitantly with age. Once information is acquired and organized it remains quite stable in the memory of older employees. With regard to learning ability, research has demonstrated that the ability to learn and apply new information continues almost indefinitely and that while older persons sometimes require more time to learn—due to their tendency to be more cautious—subsequent performance is not affected. Since intellectual ability does not decline with age, learning can continue well into old age. It may be desirable, however, to permit flexibility in time requirements for learning for older employees.

Finally, it is well known that motivation is a key factor affecting performance. Older employees tend to be more satisfied with work that is inherently interesting, requires significant attention to detail and involves responsibility. Since older employees are more stable and consistent in their work, they often are highly motivated. But, it has been demonstrated that age stereotypes and organizational personnel practices have serious consequences on the motivation of older employees. This problem may be caused by inappropriate responses by managers to older employees whose need for continuous growth in job responsibility has diminished but whose need for recognition for performance and continued job learning remains high. Managers have been found to more often transfer older employees, not refer them for training opportunities, and promote them less often, despite the fact that their qualifications equaled those of younger workers. Often older employees recognize such age stereotyped practices and therefore become less motivated in response to them. It therefore appears that in most cases, loss of motivation is being erroneously attributed to age when in fact it is related to organizational barriers to continued growth and development which differentially affect older employees. For many older workers, opportunities for continued job growth, training, and variety of assignments are more important than monetary benefits in terms of maintaining motivation.

Functional changes in physical, intellectual, and psychological capacities of older workers are generally not dramatic and there is high variation in such changes within age groups. Older employees clearly have the necessary capabilities to participate successfully in job training programs. In some cases, particular approaches to training older workers have emphasized: self-paced learning, controls over amounts of information being processed and required speed of response, and rapid feedback of results. These have proven successful in improving learning speed and retention of information. Once trained, over time older employees can survive in new jobs resulting from training longer than younger workers. This remains the case despite the fact that older employees have a shorter working life head in the organization.

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Certainly a basic concern of employers is that their workers retain the physical, intellectual, and psychological capacities to assure continuing high performance. When capacities decline, employers usually assume that performance and productivity are negatively affected and that costs of production increase. While certain changes in major functional characteristics do occur over time, these are not significant, occur very gradually and vary considerably within age groups. It is therefore inappropriate to assume that there are major shifts in capacities with aging that negatively affect productivity and thus raise costs. Individual differences are so substantial that age is an ineffective indicator of changes in capacities. Therefore, a superior approach is to examine both individual and job characteristics so that these can be better related to achieve higher productivity.

6.3 PERFORMANCE AND PRODUCTIVITY

Irrespective of certain age-related changes in functional characteristics, age is not correlated with any level of change in productivity. There is no pattern of higher or lower productivity in any particular age group. Within age group variability in performance is higher than differences between age groups. Most jobs do not fully require the physical or intellectual abilities of workers and older employees can often compensate for most of the minimal changes which take place. A large variety of studies have comparatively examined the performance of older employees in numerous occupations. In manufacturing industries, output remains stable through the mid-1950's and declines slightly (less than 10 percent) thereafter. Service continuity was highest for older employees. For more service oriented occupations (clerical, sales, transportation) the evidence indicates that there is little or no decline in performance until ages 60–65 and when declines occur they are minimal. Older workers in these occupations have steadier rates of output, an equal degree of accuracy and greater consistency in output than younger workers.

Studies of scientists and engineers have found bimodal distributions of productivity with the first peak at age 40–50 and the second at 50–60. This pattern was also observed for scholars and artists. A very large proportion of creative ideas, patents, research papers, etc., are produced by older employees. Research on managers, however, reveals older managers are more reluctant to take risks and take longer to reach decisions than younger managers. But, these more mature managers are better able to evaluate new information, analyze it in the context of the organization and make reliable and consistent decisions. Thus there is no evidence to indicate that risk-aversion leads to lowered productivity for older managers (exhibit 6–1).

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Exhibit 6-1

Comparative Job Performance by Age, Selected Occupations and Industries

(Indexes of output per man-hour; age group 35-44 = 100)

Occupation or Industry	Under 25 Years	25-34 Years	35-44 Years	45-54 Years	55-64 Years	65 Years & Over
Incentive Workers (a)						
Men's Footwear						
Men	93.8	100.3	100.0	97.7	92.5	81.1
Women	94.4	102.8	100.0	98.8	94.1	88.0
Household Furniture						
Men	98.5	101.5	100.0	96.1	94.5	93.6
Women	101.4	107.4	100.0	98.7	85.6	(b)
Office Workers	92.4	99.4	100.0	100.0	98.6	101.2
Federal Mail Sorters	101.2	100.7	100.0	100.1	98.5	93.3

(a) Based on a study of 15 large establishments in the men's footwear industry and 11 large establishments in the household furniture industry. The great majority of the workers surveyed were piece-rate workers.

(b) U.S. Department of Labor, Bureau of Labor Statistics, Comparative Job Performance by Age: Large Plants in the Men's Footwear and Household Furniture Industries, Bull. 1223 (Washington, DC 1957): "Comparative Job Performance of Office Workers by Age," Monthly Labor Review, January 1960, pp.39-43; "The Job Performance of Federal Mail Sorters by Age," Monthly Labor Review, March 1964, pp. 296-300.

Supervisors' ratings of the performance of older workers indicate that most are rated as equal or superior to younger employees in terms of absenteeism, dependability, judgment, quality and amount of work and interpersonal skill; there is no particular age when productivity declines and it is virtually impossible to identify specific weaknesses related to age. In examining actual experience with older workers within organizations, it is clear that while for specific occupations older employees' performance ratings may be equal, below, or exceed those of younger employees, overall output rarely differs significantly. Frequently performance improves with better skills and firm-specific knowledge gained by experience. Organizations that have used performance ratings in reduction-in-force decisions have often found that the average age of their work force has increased. The use of age based criteria for evaluating performance is therefore inappropriate unless a direct relationship between aging and change in performance can be demonstrated.

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Even though for many or most occupational tasks, skill and experience determine productivity, there are some circumstances where the type of job and its requirements can affect the performance level of older employees. Usually this is the case for jobs where speed is an important factor or where continuous physical strength is required. In these situations there may be a relationship between performance, productivity and age. However, the extent of this effect depends upon the functional physiological capacities of individuals, not on their chronological age. It has been found that modest alterations in production work arrangements and making continuous performance requirements less rigid usually permit older employees to maintain prior rates of production. Therefore, even for jobs which may place stress on certain declining physical and/or physiological capacities of older employees, adjustments can often be made which will compensate for the effect of job-related stress and permit continuation of productivity.

Because chronological age is not related to maintenance of performance, older employees are not more costly to firms because of declining productivity. This is not to suggest, however, that certain older (as well as younger) individuals do not experience declining performance. This can and does occur and is very costly to organizations. Since within age groups, variations in capacities and skills related to job requirements. This means that functional individual and job task criteria should be applied to match the person with the job. Age is not a useful criterion for functional analysis. What is needed is information about the level of skill, knowledge, and experience required for particular jobs—information usually available in organizations—and information on employee capabilities which is very often available for the existing work force and can also be obtained for entering employees.

Maintaining matches between workers and jobs requires relatively continuous training and employee development efforts by organizations. Failure to do so will clearly be costly in terms of productivity declines which will occur irrespective of the ages of workers. Subsidized early retirement can be very costly to organizations in terms of employee benefits and loss of firm specific knowledge and experience. From the standpoint of performance and productivity, using age as a criterion for employee retention policy decisions, is usually ineffective if maintaining the organization's capacity is an important objective. High turnover of trained younger employees is often unavoidable. Therefore, even when efforts are made to match younger workers skills with jobs, through providing training, costs may not be recovered due to turnover. This situation need not occur with older employees, particularly those already within the organization because they are unlikely to leave after many years of service. Provision of training, job redesign and job environment modification can be highly cost-effective for using the known human capital of older employees.

It is difficult at present to develop cost estimates for losses of productivity due to mismatches between employees and jobs. But, the age of employees is irrelevant to these costs and they depend upon the degree to which functional capacities are matched to job requirements.

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6.4 HEALTH AND THE AGING WORK FORCE

The health of all employees is a major concern of organizations because of the costs for medical, disability and insurance benefits, the effects of health on productivity and the consequences of health for individuals and work groups. Standard measures of health include: mortality rates, incidence of illness—both acute and chronic—incidence and prevalence of disability and resulting physical and functional impairments affecting work performance. Rising costs for health care are a major national concern involving public programs—medicare, medicaid, aid to the medically needy—private insurers, and firms which self-insure. To the extent that health costs are perceived as increasing with the age of employees, such costs serve as a disincentive to retaining or hiring older workers. On the other hand, to the extent that the health of older persons is improving because of improved management and control of acute and chronic conditions, and reduction in stress related dangerous occupations, their productive capacity in the organization can increase.

Earlier it was shown that statistical data demonstrates that health care costs increase with age of employees. The extent to which this cost influences employer decisions to retain or hire older workers is not documented. The influence probably depends on the expected incidence and prevalence of health problems in employer work forces. Therefore, even though the overall health of older workers and the length of time they can remain productive may be increasing, multiple other factors influence the employer cost of health benefits for older workers. Though there is considerable variability in individual employer claims experience, employers may be precluded from varying health plan contributions by age in order to reduce the effect on employers of increasing health costs with aging of their work forces. It is clear that higher contributions are prohibited at ages 65–69, but it is not clear if age based contributions are acceptable at younger ages.

In terms of life expectancy, the overall health of older persons continues to improve. On average, reaching age 65 now can expect to live for an additional 16 years with women exceeding men by 4 to 5 years. Projections indicate a continuation of increased life expectancy in the future. However, life expectancy is only one measure of health status and may be the least important from the standpoint of the work environment.

It is clear that acute conditions increase in frequency between ages 45–62 and that chronic conditions predominate thereafter. However, due to variability among the older population, age is a poor predictor of health status. For those persons having acute episodes, the incidence of disability has increased significantly in recent years. However, many persons reporting disability continue to work and therefore the existence of physical impairments (which increases with age) is not a good measure of employment retention (exhibit 6–2).

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Exhibit 6-2

Percent of Population Aged 45 and Over Who Reported Selected Chronic Conditions, by Age, 1979

	Arthritis	Hypertensive Disease	Heart Conditions*	Diabetes
Total 45 Years and Over	32%	27%	18%	7%
45-64 Years	25%	21%	13%	6%
45-54 Years	20%	17%	9%	5%
55-64 Years	31%	26%	17%	6%
65 Years & Over	44%	39%	27%	8%
65-74 Years	42%	37%	26%	8%
75 Years & Over	49%	41%	30%	8%

Note: The data reported in the above section reflect illness incidence and prevalence patterns. They do not indicate the seriousness of the reported conditions in terms of their disability impact, their medical requirements, or their associated mortality risks. Information of that nature is not traditionally included in such reports. This fact should be borne in mind when evaluating standard health data such as those presented above.

*Percentage of persons with heart conditions may be overestimated because the estimate does not represent an unduplicated count of persons with conditions.

Source: Health Interview Survey, National Center for Health Statistics.

While acute episodes of illness are costly, their ultimate consequences depend upon the degree of chronic functional impairment that results from illness. It turns out that: (a) the majority of people aged 45-74 report no limitations in activity due to chronic functional impairments; (b) less than 15 percent of those over age 45 report that they are unable to perform major activities because of a chronic impairment; and (c) most persons aged 45+ report partial rather than full work disabilities. Evidence is accumulating that older persons with mild or moderate impairments can often return to work with only modest amounts of rehabilitation assistance so long as employers provide the opportunity to continue employment. In terms of time lost from employment due to illness, there are only very small differences for all employees over age 45 in average days in bed per person-year, absences from work due to illness, average number of physician visits per year, and incidence of hospitalization. However, these rates are higher than those for younger employees. While the prevalence and incidence of acute (for the middle-aged) and chronic (for those 60 and older) health problems increases with age, the functional consequences in the workplace of these health problems varies considerably and age is a poor predictor of employment-related effects. It is not clear how efforts to assure continued employment after an illness with accompanying disability will change health costs of employers. But there is no ques-

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tion that major savings in long-term disability and workers' compensation costs occur when employees return to work.

With regard to workplace injuries, a major national review of the workers' compensation records has disclosed that older workers have lower rates of occupational injuries than younger and this is primarily attributable to job experience effects. When older workers are injured, however, there is a greater likelihood of more severe consequences in terms of fatality and permanent disability. While total costs for older injured workers are lower than for younger employees (due to fewer cases) average indemnity compensation and medical payments increase with age (see exhibits 6-3 and 6-4).

While most older employees retain good health and experience no work limiting impairments, the incidence and prevalence of health problems does increase with age. This results in increased health care costs which must be partly covered by employers. The functional consequences of episodes of illness experienced by older employees are highly variable and it is difficult to evaluate the degree of cost savings

Exhibit 6-3

Work-injury ratios by age[1]

Age	Percent Employment Distribution[2]	Percent Injury Distribution	Work Injury Ratio[3]
16 - 17	3.2	1.9	.50[4]
18 - 19	5.3	6.8	1.20
20 - 24	15.2	21.0	1.38
16 - 24	23.7	29.7	1.25
25 - 34	26.4	30.3	1.15
35 - 44	18.7	16.7	.89
45 - 54	17.6	13.6	.77
55 - 64	11.4	8.8	.77
65+	2.2	0.9	.41[4]

1 Based on current cases in 26 States. Includes illnesses.
2 Industry employment CPS data 1977.
3 The ratio computation is column 2 divided by column 1.
4 Because of the relatively small magnitudes associated with one or both components in these ratios the relative errors for these age groups would be larger than those for the other age groups.

Source: N. Root, "Injuries at Work are Fewer Among Older Employees," Monthly Labor Review, March 1981.

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Exhibit 6-4

Ratio of Disability Outcomes by Age

	Age Group					
	16-24	25-34	35-44	45-54	55-64	65+
All closed cases	1.19	1.05	.94	.90	.88	.50
Fatalities	.77	.90	1.06	.86	1.45	2.95
Permanent disabilities	.81	.90	1.09	1.15	1.24	.81
Temporary disabilities	1.27	1.03	.89	.86	.85	.45
Other	1.17	1.14	.96	.85	.75	.36

Source: N. Root, "Injuries at Work Are Fewer Among Older Employees," Monthly Labor Review, March 1981.

when older workers continue employment after illness. Health status itself cannot be predicted by age of employees nor is it directly related to minor functional decrements accompanying normal aging. The fact that acute and chronic conditions increase with age is not sufficient to require changes in corporate personnel policies relating to retention of older workers because most do not experience excessive health problems. The most important issue involves controlling increasing health care costs for that portion of the older work force which experiences major acute or chronic health problems.

Key Points and Policy Issues

Changes in physical, mental, and psychological capabilities associated with aging occur very gradually, vary considerably between individuals and generally do not affect performance.

Older workers maintain the capacity to learn and successfully apply new information.

Chronological age is not related to any level of productivity.

In most occupations productivity levels remain stable or increase with aging.

When employees experience declining productivity, the declines are usually caused by factors other than age.

Health care costs tend to increase for older workers but most do not experience sickness episodes which lower work performance.

The critical factor in maintaining productivity of older workers is assuring that their skills and capacities match the requirements of the job.

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SECTION 7

Section 7 summarizes policy implications in two parts. Section 7.1 discusses policy issues in several areas and section 7.2 discusses areas where further research would be helpful.

7.1 POLICY IMPLICATIONS

Benefit costs do increase with age. Depending on the benefit plan, the cost of employees at ages 50–54 is likely to be 1 to 7 percent higher than at the 45–49 group. At ages 55–59, this increases to 1 to 16 percent. At ages 60–64, this increases to 5 to 35 percent. At ages 65–69, the medical cost increases sharply. Pension costs also increase if the plan offers actuarial increases and continued accruals. However, if pension benefits are frozen, there is actually a reduction in cost in the pension plan. If accruals are continued, but actuarial increases are not granted, there are offsetting costs for the accruals and shorter period of expected benefit payments. In many cases these offset so that there is no cost or a reduction in cost. If unreduced retirement benefits are offered at ages 60 or 62, then pension costs may start to decline after the first age at which unreduced benefits are available. This will depend on plan design, and has not been reflected in the calculations in this paper.

Existing legal requirements have served to ensure that older workers would have access to benefits on generally the same basis as all workers. They have also served to bring attention to the issues and to the costs of benefits for older workers. TEFRA amendments changed the overall picture with respect to employees who are age 65 to 69. It is the opinion of the authors that benefits have not been a major factor in employment policy decisions made by employers in the past, but they could become an increasingly important factor in the future.

Flexible benefits make it possible for employers to spend benefit dollars so as to do the best job for the greatest number of employees. The authors believe that the needs of employees vary, and that encouraging employers to offer programs which allow employees to tailor their own benefits is desirable. If such program can be based on equal cost at different ages, they will be a positive factor in the hiring and retention of older workers.

If policy is to encourage (or not discourage) the employment of older persons, it is important that the requirements placed on employers not be too onerous. Therefore, the authors suggest that the requirements placed on employers should be kept to a minimum, and that the principle of cost equalization be maintained and possibly extended. This is because it is counterproductive for employers to have compensation policies which are significantly more costly for older workers.

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Health care costs for older persons whether they are employed or not employed are high. Current per capita health care costs of the over-65 population are believed to be in excess of $4,000 per year. For a couple, this is in excess of $8,000 per year. The Congress is addressing this matter when it deals with medicare policy. It is important that this be dealt with as an issue related to the health care delivery system, and not through imposing too many requirements on employers. As demonstrated earlier, employers are facing significant cost escalation for health benefits which in many cases is beyond their control to a significant extent.

Existing requirements for older employees may be aggravating employer cost problems. Further requirements might easily result in decisions to reduce the number of older workers because of problems of obtaining coverage and costs of coverage.

Maintenance of productivity is determined by the extent to which the skills of employees are matched to the requirements of the job. For older workers this issue is often critical because they are more at risk in terms of skill and education obsolescence. It is well recognized that the pace of technological change is making continuous education and training much more important for maintaining the value of human capital and enhancing the efficiency of productivity. For the older employee, the access to training and education may become a critical factor in maintaining the advantage of continuing in employment. Employers cannot be expected to continue to retain workers of any age who are unfamiliar with methods of production, equipment, or work processes.

While there are many reasons why employers have not tended to offer education and training to older employees in the past, it is unlikely that this approach can be successfully continued in the future. Work force aging and the decline in younger labor force entrance will be key influences in this regard. Thus, for practical reasons employers will be distributing training and education resources more broadly in the future. However, this does not imply that a complete change in existing patterns is in the offing.

For older employees to more fully benefit from education and training, some additional encouragement for employers through appropriate public policies could be extremely significant. Certainly serious attention should be given to such proposals as the individual training account, enhancement of tax incentives for employee training and development activities and experiments with lifelong learning programs in education. It should be recognized, however, that these steps alone will not automatically result in employers shifting training resources toward older employees. But they could serve as incentives for extending training to aging workers on a more frequent and consistent basis.

The critical issue which will relate to satisfactory employment for older persons is the maintenance of useful skills throughout the working lifetime. It is essential that more attention be paid to the issue of training, both within and outside the workplace so that Americans have the opportunity to maintain their skills. Loss of skills and inadequate access to opportunities to earn new skills will probably be the major problem facing older workers in the future. Public policy initia-

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tives are needed to encourage private sector initiatives in this regard and to use public educational institutions for this purpose.

Excess cost can result for an employer whenever there is an employee poorly matched to a job, or an employee who is not performing. These issues are not related to age, but are easily confused with issues which are. It is the opinion of the authors that the maintenance of sound systems of performance appraisal and personnel management are key to successfully working with older workers. The same systems prevent discrimination against women and minorities. Sound personnel policies are important also for fair treatment of all workers. Public policy should encourage such systems. There are already in place a variety of different laws regarding nondiscrimination in employment. It is the impression of the authors that enforcement of such laws is mixed in its effectiveness. The authors support consolidation of such requirements into one set of standards, with paperwork and filing requirements to be kept to a minimum, and with an adequate level of enforcement so that employers will believe that the laws will actually be enforced.

Some older workers will be displaced and need new jobs. In light of the relatively high benefit costs, and the concerns which employers have, it would be desirable to provide some incentives to employers to encourage the use of such workers. Public support for training for such displaced workers is also encouraged.

Incentives and Disincentives in Costs of Employee Benefits

Although the attribution of employee benefit costs by age indicates that certain components of benefit costs increase, it is very questionable whether employers currently are making employee retention and hiring decisions based on these types of cost implications. Changing organizational, skill and technical needs and competition are more important reasons for employer personnel decisions including incentives for earlier retirement. However, this review of the costs of older workers demonstrates that certain components of cost, notably health benefits, may become major influences on employer retention and hiring decisions in the future. Unless steps are taken to moderate the impact of these costs, older employees might be in an even more disadvantageous position in the future through no fault of their own. In fact, cost increases might be significant enough to have the effect of reversing the desirable goal of using functional rather than chronological measures to assess the value of older employees, making employer policy decisions even more age related than in the past. The authors therefore believe that issues related to costs of older employees may be highly significant in terms of their future employment potential. More research would be appropriate to better define and conceptualize these issues for public policymakers.

7.2 RESEARCH NEEDED

Our analysis of costs of older employees has raised a number of questions which cannot be answered definitively based on available data. We believe that further research would be helpful to policymakers in dealing with these issues. The further research suggested is in those areas where there are likely to be significant policy considerations.

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We believe that some costs of employment are legitimately attributable to age and are in fact age related. These include the costs of health benefits, life insurance, disability insurance, and certain portions of defined benefit pension plan costs. Other costs should not be viewed as being age related even though observed experience may differ by age. These include turnover, costs of training and education, direct pay, and other human resources costs.

Areas where further research may assist policymakers in understanding the workplace and in setting employment related policy include:

—Analysis of the factors which affect pay, access to jobs, access to training opportunities and promotion.
—Further information about health care costs by age and benefit plan design, and methods of controlling such costs.
—Study of the cost and implications of failure to maintain a match between skills and job assignment. The implications of failure to do lifelong training.
—Productivity implications of providing or not providing regular training and maintenance of human capital.
—Use of flexible benefits to aid in providing benefit packages well suited to the needs of all workers at a reasonable cost.
—The implications of various approaches to health care and retirement benefits for workers over age 65, including innovative and new approaches.

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APPENDIX

ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 1

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $0

Pension: Defined Benefit
Percentage of Salary 2.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,280	$46	$20	$11,346	95.2%
30-34	$1,280	$66	$20	$11,366	95.4%
35-39	$1,280	$96	$40	$11,416	95.8%
40-44	$1,280	$138	$60	$11,478	96.3%
45-49	$1,600	$200	$120	$11,920	100.0%
50-54	$1,800	$292	$200	$12,292	103.1%
55-59	$2,000	$432	$300	$12,732	106.8%
60-64	$2,560	$646	$460	$13,666	114.6%
65-69*	$3,600	$0	$460	$14,060	118.0%
65-69**	$3,600	$792	$460	$14,852	124.6%
		Salary Level - $25,000			
Under 30	$1,280	$115	$50	$26,445	96.5%
30-34	$1,280	$165	$50	$26,495	96.7%
35-39	$1,280	$240	$100	$26,620	97.2%
40-44	$1,280	$345	$150	$26,775	97.7%
45-49	$1,600	$500	$300	$27,400	100.0%
50-54	$1,800	$730	$500	$28,030	102.3%
55-59	$2,000	$1,080	$750	$28,830	105.2%
60-64	$2,560	$1,615	$1,150	$30,325	110.7%
65-69*	$3,600	$0	$1,150	$29,750	108.6%
65-69**	$3,600	$1,980	$1,150	$31,730	115.8%
		Salary Level - $50,000			
Under 30	$1,280	$230	$100	$51,610	97.0%
30-34	$1,280	$330	$100	$51,710	97.2%
35-39	$1,280	$480	$200	$51,960	97.7%
40-44	$1,280	$690	$300	$52,270	98.3%
45-49	$1,600	$1,000	$600	$53,200	100.0%
50-54	$1,800	$1,460	$1,000	$54,260	102.0%
55-59	$2,000	$2,160	$1,500	$55,660	104.6%
60-64	$2,560	$3,230	$2,300	$58,090	109.2%
65-69*	$3,600	$0	$2,300	$55,900	105.1%
65-69**	$3,600	$3,960	$2,300	$59,860	112.5%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 2

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $600

Pension: Defined Benefit
Percentage of Salary 2.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$680	$46	$20	$10,746	94.9%
30-34	$680	$66	$20	$10,766	95.1%
35-39	$680	$96	$40	$10,816	95.5%
40-44	$680	$138	$60	$10,878	96.1%
45-49	$1,000	$200	$120	$11,320	100.0%
50-54	$1,200	$292	$200	$11,692	103.3%
55-59	$1,400	$432	$300	$12,132	107.2%
60-64	$1,960	$646	$460	$13,066	115.4%
65-69*	$3,000	$0	$460	$13,460	118.9%
65-69**	$3,000	$792	$460	$14,252	125.9%
		Salary Level - $25,000			
Under 30	$680	$115	$50	$25,845	96.4%
30-34	$680	$165	$50	$25,895	96.6%
35-39	$680	$240	$100	$26,020	97.1%
40-44	$680	$345	$150	$26,175	97.7%
45-49	$1,000	$500	$300	$26,800	100.0%
50-54	$1,200	$730	$500	$27,430	102.4%
55-59	$1,400	$1,080	$750	$28,230	105.3%
60-64	$1,960	$1,615	$1,150	$29,725	110.9%
65-69*	$3,000	$0	$1,150	$29,150	108.8%
65-69**	$3,000	$1,980	$1,150	$31,130	116.2%
		Salary Level - $50,000			
Under 30	$680	$230	$100	$51,010	97.0%
30-34	$680	$330	$100	$51,110	97.2%
35-39	$680	$480	$200	$51,360	97.6%
40-44	$680	$690	$300	$51,670	98.2%
45-49	$1,000	$1,000	$600	$52,600	100.0%
50-54	$1,200	$1,460	$1,000	$53,660	102.0%
55-59	$1,400	$2,160	$1,500	$55,060	104.7%
60-64	$1,960	$3,230	$2,300	$57,490	109.3%
65-69*	$3,000	$0	$2,300	$55,300	105.1%
65-69**	$3,000	$3,960	$2,300	$59,260	112.7%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 3

Medical:
Per Employee Total Cost Per Year $2,000
Employee Contributions per Year $0

Pensions: Defined Benefit
Percentage of Salary 2.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
Salary Level - $10,000					
Under 30	$2,240	$46	$20	$12,306	93.8%
30-34	$2,240	$66	$20	$12,326	93.9%
35-39	$2,240	$96	$40	$12,376	94.3%
40-44	$2,240	$138	$60	$12,438	94.8%
45-49	$2,800	$200	$120	$13,120	100.0%
50-54	$3,150	$292	$200	$13,642	104.0%
55-59	$3,500	$432	$300	$14,232	108.5%
60-64	$4,480	$646	$460	$15,586	118.8%
65-69*	$6,300	$0	$460	$16,760	127.7%
65-69**	$6,300	$792	$460	$17,552	133.8%
Salary Level - $25,000					
Under 30	$2,240	$115	$50	$27,405	95.8%
30-34	$2,240	$165	$50	$27,455	96.0%
35-39	$2,240	$240	$100	$27,580	96.4%
40-44	$2,240	$345	$150	$27,735	97.0%
45-49	$2,800	$500	$300	$28,600	100.0%
50-54	$3,150	$730	$500	$29,380	102.7%
55-59	$3,500	$1,080	$750	$30,330	106.0%
60-64	$4,480	$1,615	$1,150	$32,245	112.7%
65-69*	$6,300	$0	$1,150	$32,450	113.5%
65-69**	$6,300	$1,980	$1,150	$34,430	120.4%
Salary Level - $50,000					
Under 30	$2,240	$230	$100	$52,370	96.6%
30-34	$2,240	$330	$100	$52,470	96.8%
35-39	$2,240	$480	$200	$52,920	97.3%
40-44	$2,240	$690	$300	$53,230	97.8%
45-49	$2,800	$1,000	$600	$54,400	100.0%
50-54	$3,150	$1,460	$1,000	$55,610	102.2%
55-59	$3,500	$2,160	$1,500	$57,160	105.1%
60-64	$4,480	$3,230	$2,300	$60,010	110.3%
65-69*	$6,300	$0	$2,300	$58,600	107.7%
65-69**	$6,300	$3,960	$2,300	$62,560	115.0%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 4

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $600

Pension: Defined Benefit
Percentage of Salary 2.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,640	$46	$20	$11,706	93.5%
30-34	$1,640	$66	$20	$11,726	93.7%
35-39	$1,640	$96	$40	$11,776	94.1%
40-44	$1,640	$138	$60	$11,838	94.6%
45-49	$2,200	$200	$120	$12,520	100.0%
50-54	$2,550	$292	$200	$13,042	104.2%
55-59	$2,900	$432	$300	$13,632	108.9%
60-64	$3,880	$646	$460	$14,986	119.7%
65-69*	$5,700	$0	$460	$16,160	129.1%
65-69**	$5,700	$792	$460	$16,952	135.4%
		Salary Level - $25,000			
Under 30	$1,640	$115	$50	$26,805	95.7%
30-34	$1,640	$165	$50	$26,855	95.9%
35-39	$1,640	$240	$100	$26,980	96.4%
40-44	$1,640	$345	$150	$27,135	96.9%
45-49	$2,200	$500	$300	$28,000	100.0%
50-54	$2,550	$730	$500	$28,780	102.8%
55-59	$2,900	$1,080	$750	$29,730	106.2%
60-64	$3,880	$1,615	$1,150	$31,645	113.0%
65-69*	$5,700	$0	$1,150	$31,850	113.8%
65-69**	$5,700	$1,980	$1,150	$33,830	120.8%
		Salary Level - $50,000			
Under 30	$1,640	$230	$100	$51,970	96.6%
30-34	$1,640	$330	$100	$52,070	96.8%
35-39	$1,640	$480	$200	$52,320	97.2%
40-44	$1,640	$690	$300	$52,630	97.8%
45-49	$2,200	$1,000	$600	$53,800	100.0%
50-54	$2,550	$1,460	$1,000	$55,010	102.2%
55-59	$2,900	$2,160	$1,500	$56,560	105.1%
60-64	$3,880	$3,230	$2,300	$59,410	110.4%
65-69*	$5,700	$0	$2,300	$58,000	107.8%
65-69**	$5,700	$3,960	$2,300	$61,960	115.2%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 5

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $1,200

Pension: Defined Benefit
Percentage of Salary 2.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,040	$46	$20	$11,106	93.2%
30-34	$1,040	$66	$20	$11,126	93.3%
35-39	$1,040	$96	$40	$11,176	93.8%
40-44	$1,040	$138	$60	$11,238	94.3%
45-49	$1,600	$200	$120	$11,920	100.0%
50-54	$1,950	$292	$200	$12,442	104.4%
55-59	$2,300	$432	$300	$13,032	109.3%
60-64	$3,280	$646	$460	$14,386	120.7%
65-69*	$5,100	$0	$460	$15,560	130.5%
65-69**	$5,100	$792	$460	$16,352	137.2%
		Salary Level - $25,000			
Under 30	$1,040	$115	$50	$26,205	95.6%
30-34	$1,040	$165	$50	$26,255	95.8%
35-39	$1,040	$240	$100	$26,380	96.3%
40-44	$1,040	$345	$150	$26,535	96.8%
45-49	$1,600	$500	$300	$27,400	100.0%
50-54	$1,950	$730	$500	$28,180	102.8%
55-59	$2,300	$1,080	$750	$29,130	106.3%
60-64	$3,280	$1,615	$1,150	$31,045	113.3%
65-69*	$5,100	$0	$1,150	$31,250	114.1%
65-69**	$5,100	$1,980	$1,150	$33,230	121.3%
		Salary Level - $50,000			
Under 30	$1,040	$230	$100	$51,370	96.6%
30-34	$1,040	$330	$100	$51,470	96.7%
35-39	$1,040	$480	$200	$51,720	97.2%
40-44	$1,040	$690	$300	$52,030	97.8%
45-49	$1,600	$1,000	$600	$53,200	100.0%
50-54	$1,950	$1,460	$1,000	$54,410	102.3%
55-59	$2,300	$2,160	$1,500	$55,960	105.2%
60-64	$3,280	$3,230	$2,300	$58,810	110.5%
65-69*	$5,100	$0	$2,300	$57,400	107.9%
65-69**	$5,100	$3,960	$2,300	$61,360	115.3%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 6

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $0

Pension: Defined Benefit
Percentage of Salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefit*	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,280	$115	$20	$11,415	93.4%
30-34	$1,280	$185	$20	$11,465	93.8%
35-39	$1,280	$240	$40	$11,560	94.6%
40-44	$1,280	$345	$60	$11,685	95.6%
45-49	$1,600	$500	$120	$12,220	100.0%
50-54	$1,800	$730	$200	$12,730	104.2%
55-59	$2,000	$1,080	$300	$13,380	109.5%
60-64	$2,560	$1,615	$460	$14,635	119.8%
65-69*	$3,600	$0	$460	$14,060	115.1%
65-69**	$3,600	$1,980	$460	$16,040	131.3%
		Salary Level - $25,000			
Under 30	$1,280	$288	$50	$26,618	94.6%
30-34	$1,280	$413	$50	$26,743	95.0%
35-39	$1,280	$600	$100	$26,980	95.8%
40-44	$1,280	$863	$150	$27,293	97.0%
45-49	$1,600	$1,250	$300	$28,150	100.0%
50-54	$1,800	$1,825	$500	$29,125	103.5%
55-59	$2,000	$2,700	$750	$30,450	108.2%
60-64	$2,560	$4,038	$1,150	$32,748	116.3%
65-69*	$3,600	$0	$1,150	$29,750	105.7%
65-69**	$3,600	$4,950	$1,150	$34,700	123.3%
		Salary Level - $50,000			
Under 30	$1,280	$575	$100	$51,955	95.0%
30-34	$1,280	$825	$100	$52,205	95.4%
35-39	$1,280	$1,200	$200	$52,680	96.3%
40-44	$1,280	$1,725	$300	$53,305	97.4%
45-49	$1,600	$2,500	$600	$54,700	100.0%
50-54	$1,800	$3,650	$1,000	$56,450	103.2%
55-59	$2,000	$5,400	$1,500	$58,900	107.7%
60-64	$2,560	$8,075	$2,300	$62,935	115.1%
65-69*	$3,600	$0	$2,300	$55,900	102.2%
65-69**	$3,600	$9,900	$2,300	$65,800	120.3%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 7

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $600

Pension: Defined Benefit
Percentage of Salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$680	$115	$20	$10,815	93.1%
30-34	$680	$165	$20	$10,865	93.5%
35-39	$680	$240	$40	$10,950	94.3%
40-44	$680	$345	$60	$11,085	95.4%
45-49	$1,000	$500	$120	$11,620	100.0%
50-54	$1,200	$730	$200	$12,130	104.4%
55-59	$1,400	$1,080	$300	$12,780	110.0%
60-64	$1,960	$1,615	$460	$14,035	120.8%
65-69*	$3,000	$0	$460	$13,460	115.8%
65-69**	$3,000	$1,980	$460	$15,440	132.9%
		Salary Level - $25,000			
Under 30	$680	$288	$50	$26,018	94.4%
30-34	$680	$413	$50	$26,143	94.9%
35-39	$680	$600	$100	$26,380	95.8%
40-44	$680	$863	$150	$26,693	96.9%
45-49	$1,000	$1,250	$300	$27,550	100.0%
50-54	$1,200	$1,825	$500	$28,525	103.5%
55-59	$1,400	$2,700	$750	$29,850	108.3%
60-64	$1,960	$4,038	$1,150	$32,148	116.7%
65-69*	$3,000	$0	$1,150	$29,150	105.8%
65-69**	$3,000	$4,950	$1,150	$34,100	123.8%
		Salary Level - $50,000			
Under 30	$680	$575	$100	$51,355	94.9%
30-34	$680	$825	$100	$51,605	95.4%
35-39	$680	$1,200	$200	$52,080	96.3%
40-44	$680	$1,725	$300	$52,705	97.4%
45-49	$1,000	$2,500	$600	$54,100	100.0%
50-54	$1,200	$3,650	$1,000	$55,850	103.2%
55-59	$1,400	$5,400	$1,500	$58,300	107.8%
60-64	$1,960	$8,075	$2,300	$62,335	115.2%
65-69*	$3,000	$0	$2,300	$55,300	102.2%
65-69**	$3,000	$9,900	$2,300	$65,200	120.5%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - B

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $0

Pension: Defined Benefit
Percentage of Salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$2,240	$115	$20	$12,375	92.2%
30-34	$2,240	$165	$20	$12,425	92.6%
35-39	$2,240	$240	$40	$12,520	93.3%
40-44	$2,240	$345	$60	$12,645	94.2%
45-49	$2,800	$500	$120	$13,420	100.0%
50-54	$3,150	$730	$200	$14,080	104.9%
55-59	$3,500	$1,080	$300	$14,880	110.9%
60-64	$4,480	$1,615	$460	$16,555	123.4%
65-69*	$6,300	$0	$460	$16,760	124.9%
65-69**	$6,300	$1,980	$460	$18,740	139.6%
		Salary Level - $25,000			
Under 30	$2,240	$288	$50	$27,578	94.0%
30-34	$2,240	$413	$50	$27,703	94.4%
35-39	$2,240	$600	$100	$27,940	95.2%
40-44	$2,240	$863	$150	$28,253	96.3%
45-49	$2,800	$1,250	$300	$29,350	100.0%
50-54	$3,150	$1,825	$500	$30,475	103.8%
55-59	$3,500	$2,700	$750	$31,950	108.9%
60-64	$4,480	$4,038	$1,150	$34,668	118.1%
65-69*	$6,300	$0	$1,150	$32,450	110.6%
65-69**	$6,300	$4,950	$1,150	$37,400	127.4%
		Salary Level - $50,000			
Under 30	$2,240	$575	$100	$52,915	94.7%
30-34	$2,240	$825	$100	$53,165	95.1%
35-39	$2,240	$1,200	$200	$53,640	96.0%
40-44	$2,240	$1,725	$300	$54,265	97.1%
45-49	$2,800	$2,500	$600	$55,900	100.0%
50-54	$3,150	$3,650	$1,000	$57,800	103.4%
55-59	$3,500	$5,400	$1,500	$60,400	108.1%
60-64	$4,480	$8,075	$2,300	$64,855	116.0%
65-69*	$6,300	$0	$2,300	$58,600	104.8%
65-69**	$6,300	$9,900	$2,300	$68,500	122.5%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 9

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $600

Pension: Defined Benefit
Percentage of Salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,640	$115	$20	$11,775	91.8%
30-34	$1,640	$165	$20	$11,825	92.2%
35-39	$1,640	$240	$40	$11,920	93.0%
40-44	$1,640	$345	$60	$12,045	94.0%
45-49	$2,200	$500	$120	$12,820	100.0%
50-54	$2,550	$730	$200	$13,480	105.1%
55-59	$2,900	$1,080	$300	$14,280	111.4%
60-64	$3,880	$1,615	$460	$15,935	124.5%
65-69*	$5,700	$0	$460	$16,160	126.1%
65-69**	$5,700	$1,980	$460	$18,140	141.5%
		Salary Level - $25,000			
Under 30	$1,640	$288	$50	$26,978	93.8%
30-34	$1,640	$413	$50	$27,103	94.3%
35-39	$1,640	$600	$100	$27,340	95.1%
40-44	$1,640	$863	$150	$27,653	96.2%
45-49	$2,200	$1,250	$300	$28,750	100.0%
50-54	$2,550	$1,825	$500	$29,875	103.9%
55-59	$2,900	$2,700	$750	$31,350	109.0%
60-64	$3,880	$4,038	$1,150	$34,068	118.5%
65-69*	$5,700	$0	$1,150	$31,850	110.8%
65-69**	$5,700	$4,950	$1,150	$36,800	128.0%
		Salary Level - $50,000			
Under 30	$1,640	$575	$100	$52,315	94.6%
30-34	$1,640	$825	$100	$52,565	95.1%
35-39	$1,640	$1,200	$200	$53,040	95.9%
40-44	$1,640	$1,725	$300	$53,665	97.0%
45-49	$2,200	$2,500	$600	$55,300	100.0%
50-54	$2,550	$3,650	$1,000	$57,200	103.4%
55-59	$2,900	$5,400	$1,500	$59,800	108.1%
60-64	$3,880	$8,075	$2,300	$64,255	116.2%
65-69*	$5,700	$0	$2,300	$58,000	104.9%
65-69**	$5,700	$9,900	$2,300	$67,900	122.8%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 10

Medical:
Per Employee Total Cost Per Year $2,000
Employee Contributions per Year $1,200

Pension: Defined Benefit
Percentage of Salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,040	$115	$20	$11,175	91.4%
30-34	$1,040	$165	$20	$11,225	91.9%
35-39	$1,040	$240	$40	$11,320	92.6%
40-44	$1,040	$345	$60	$11,445	93.7%
45-49	$1,600	$500	$120	$12,220	100.0%
50-54	$1,950	$730	$200	$12,880	105.4%
55-59	$2,300	$1,080	$300	$13,680	111.9%
60-64	$3,280	$1,615	$460	$15,355	125.7%
65-69*	$5,100	$0	$460	$15,560	127.3%
65-69**	$5,100	$1,980	$460	$17,540	143.5%
		Salary Level - $25,000			
Under 30	$1,040	$288	$50	$26,378	93.7%
30-34	$1,040	$413	$50	$26,503	94.1%
35-39	$1,040	$600	$100	$26,740	95.0%
40-44	$1,040	$863	$150	$27,053	96.1%
45-49	$1,600	$1,250	$300	$28,150	100.0%
50-54	$1,950	$1,825	$500	$29,275	104.0%
55-59	$2,300	$2,700	$750	$30,750	109.2%
60-64	$3,280	$4,038	$1,150	$33,468	118.9%
65-69*	$5,100	$0	$1,150	$31,250	111.0%
65-69**	$5,100	$4,950	$1,150	$36,200	128.6%
		Salary Level - $50,000			
Under 30	$1,040	$575	$100	$51,715	94.5%
30-34	$1,040	$825	$100	$51,965	95.0%
35-39	$1,040	$1,200	$200	$52,440	95.9%
40-44	$1,040	$1,725	$300	$53,065	97.0%
45-49	$1,600	$2,500	$600	$54,700	100.0%
50-54	$1,950	$3,650	$1,000	$56,600	103.5%
55-59	$2,300	$5,400	$1,500	$59,200	108.2%
60-64	$3,280	$8,075	$2,300	$63,655	116.4%
65-69*	$5,100	$0	$2,300	$57,400	104.9%
65-69**	$5,100	$9,900	$2,300	$67,300	123.0%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 11

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $0

Pension: Defined Benefit
Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,280	$230	$20	$11,530	90.6%
30-34	$1,280	$330	$20	$11,630	91.4%
35-39	$1,280	$480	$40	$11,800	92.8%
40-44	$1,280	$690	$60	$12,030	94.6%
45-49	$1,600	$1,000	$120	$12,720	100.0%
50-54	$1,800	$1,460	$200	$13,460	105.8%
55-59	$2,000	$2,160	$300	$14,460	113.7%
60-64	$2,560	$3,230	$460	$16,250	127.8%
65-69*	$3,600	$0	$460	$14,060	110.5%
65-69**	$3,600	$3,960	$460	$18,020	141.7%
		Salary Level - $25,000			
Under 30	$1,280	$575	$50	$26,905	91.5%
30-34	$1,280	$825	$50	$27,155	92.4%
35-39	$1,280	$1,200	$100	$27,580	93.8%
40-44	$1,280	$1,725	$150	$28,155	95.8%
45-49	$1,600	$2,500	$300	$29,400	100.0%
50-54	$1,800	$3,650	$500	$30,950	105.3%
55-59	$2,000	$5,400	$750	$33,150	112.8%
60-64	$2,560	$8,075	$1,150	$36,785	125.1%
65-69*	$3,600	$0	$1,150	$29,750	101.2%
65-69**	$3,600	$9,900	$1,150	$39,650	134.9%
		Salary Level - $50,000			
Under 30	$1,280	$1,150	$100	$52,530	91.8%
30-34	$1,280	$1,650	$100	$53,030	92.7%
35-39	$1,280	$2,400	$200	$53,880	94.2%
40-44	$1,280	$3,450	$300	$55,030	96.2%
45-49	$1,600	$5,000	$600	$57,200	100.0%
50-54	$1,800	$7,300	$1,000	$60,100	105.1%
55-59	$2,000	$10,800	$1,500	$64,300	112.4%
60-64	$2,560	$16,150	$2,300	$71,010	124.1%
65-69*	$3,600	$0	$2,300	$55,900	97.7%
65-69**	$3,600	$19,800	$2,300	$75,700	132.3%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 1?

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $600

Pension: Defined Benefit
Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$680	$230	$20	$10,930	90.2%
30-34	$680	$330	$20	$11,030	91.0%
35-39	$680	$480	$40	$11,200	92.4%
40-44	$680	$690	$60	$11,430	94.3%
45-49	$1,000	$1,000	$120	$12,120	100.0%
50-54	$1,200	$1,460	$200	$12,860	106.1%
55-59	$1,400	$2,160	$300	$13,860	114.4%
60-64	$1,960	$3,230	$460	$15,650	129.1%
65-69*	$3,000	$0	$460	$13,460	111.1%
65-69**	$3,000	$3,960	$460	$17,420	143.7%
		Salary Level - $25,000			
Under 30	$680	$575	$50	$26,305	91.3%
30-34	$680	$825	$50	$26,555	92.2%
35-39	$680	$1,200	$100	$26,980	93.7%
40-44	$680	$1,725	$150	$27,555	95.7%
45-49	$1,000	$2,500	$300	$28,800	100.0%
50-54	$1,200	$3,650	$500	$30,350	105.4%
55-59	$1,400	$5,400	$750	$32,550	113.0%
60-64	$1,960	$8,075	$1,150	$36,185	125.6%
65-69*	$3,000	$0	$1,150	$29,150	101.2%
65-69**	$3,000	$9,900	$1,150	$39,050	135.6%
		Salary Level - $50,000			
Under 30	$680	$1,150	$100	$51,930	91.7%
30-34	$680	$1,650	$100	$52,430	92.6%
35-39	$680	$2,400	$200	$53,280	94.1%
40-44	$680	$3,450	$300	$54,430	96.2%
45-49	$1,000	$5,000	$600	$56,600	100.0%
50-54	$1,200	$7,300	$1,000	$59,500	105.1%
55-59	$1,400	$10,800	$1,500	$63,700	112.5%
60-64	$1,960	$16,150	$2,300	$70,410	124.4%
65-69*	$3,000	$0	$2,300	$55,300	97.7%
65-69**	$3,000	$19,800	$2,300	$75,100	132.7%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 13

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $0

Pension: Defined Benefit
Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
Salary Level - $10,000					
Under 30	$2,240	$230	$20	$12,490	89.7%
30-34	$2,240	$330	$20	$12,590	90.4%
35-39	$2,240	$480	$40	$12,760	91.7%
40-44	$2,240	$690	$60	$12,990	93.3%
45-49	$2,800	$1,000	$120	$13,920	100.0%
50-54	$3,150	$1,460	$200	$14,810	106.4%
55-59	$3,500	$2,160	$300	$15,960	114.7%
60-64	$4,480	$3,230	$460	$18,170	130.5%
65-69*	$6,300	$0	$460	$16,760	120.4%
65-69**	$6,300	$3,960	$460	$20,720	148.9%
Salary Level - $25,000					
Under 30	$2,240	$575	$50	$27,865	91.1%
30-34	$2,240	$825	$50	$28,115	91.9%
35-39	$2,240	$1,200	$100	$28,540	93.3%
40-44	$2,240	$1,725	$150	$29,115	95.1%
45-49	$2,800	$2,500	$300	$30,600	100.0%
50-54	$3,150	$3,650	$500	$32,300	105.6%
55-59	$3,500	$5,400	$750	$34,650	113.2%
60-64	$4,480	$8,075	$1,150	$38,705	126.5%
65-69*	$6,300	$0	$1,150	$32,450	106.0%
65-69**	$6,300	$9,900	$1,150	$42,350	138.4%
Salary Level - $50,000					
Under 30	$2,240	$1,150	$100	$53,490	91.6%
30-34	$2,240	$1,650	$100	$53,990	92.4%
35-39	$2,240	$2,400	$200	$54,840	93.9%
40-44	$2,240	$3,450	$300	$55,990	95.9%
45-49	$2,800	$5,000	$600	$58,400	100.0%
50-54	$3,150	$7,300	$1,000	$61,450	105.2%
55-59	$3,500	$10,800	$1,500	$65,800	112.7%
60-64	$4,480	$16,150	$2,300	$72,930	124.9%
65-69*	$6,300	$0	$2,300	$58,600	100.3%
65-69**	$6,300	$19,800	$2,300	$78,400	134.2%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE

Exhibit A - 14

Medical:

Per Employee Total Cost Per Year $2,800

Employee Contributions per Year $600

Pension: Defined Benefit

Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,640	$230	$20	$11,890	89.3%
30-34	$1,640	$330	$20	$11,990	90.0%
35-39	$1,640	$480	$40	$12,160	91.3%
40-44	$1,640	$690	$60	$12,390	93.0%
45-49	$2,200	$1,000	$120	$13,320	100.0%
50-54	$2,550	$1,460	$200	$14,210	106.7%
55-59	$2,900	$2,160	$300	$15,360	115.3%
60-64	$3,880	$3,230	$460	$17,570	131.9%
65-69*	$5,700	$0	$460	$16,160	121.3%
65-69**	$5,700	$3,960	$460	$20,120	151.1%
		Salary Level - $25,000			
Under 30	$1,640	$575	$50	$27,265	90.9%
30-34	$1,640	$825	$50	$27,515	91.7%
35-39	$1,640	$1,200	$100	$27,940	93.1%
40-44	$1,640	$1,725	$150	$28,515	95.1%
45-49	$2,200	$2,500	$300	$30,000	100.0%
50-54	$2,550	$3,650	$500	$31,700	105.7%
55-59	$2,900	$5,400	$750	$34,050	113.5%
60-64	$3,880	$8,075	$1,150	$38,105	127.0%
65-69*	$5,700	$0	$1,150	$31,850	106.2%
65-69**	$5,700	$9,900	$1,150	$41,750	139.2%
		Salary Level - $50,000			
Under 30	$1,640	$1,150	$100	$52,890	91.5%
30-34	$1,640	$1,650	$100	$53,390	92.4%
35-39	$1,640	$2,400	$200	$54,240	93.8%
40-44	$1,640	$3,450	$300	$55,390	95.8%
45-49	$2,200	$5,000	$600	$57,800	100.0%
50-54	$2,550	$7,300	$1,000	$60,850	105.3%
55-59	$2,900	$10,800	$1,500	$65,200	112.8%
60-64	$3,880	$16,150	$2,300	$72,330	125.1%
65-69*	$5,700	$0	$2,300	$58,000	100.3%
65-69**	$5,700	$19,800	$2,300	$77,800	134.6%

*Actuarial equivalent increase but no continued pension accrual after age 65

**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 15

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $1,200

Pension: Defined Benefit
Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,040	$230	$20	$11,290	88.8%
30-34	$1,040	$330	$20	$11,390	89.5%
35-39	$1,040	$480	$40	$11,560	90.9%
40-44	$1,040	$690	$60	$11,790	92.7%
45-49	$1,600	$1,000	$120	$12,720	100.0%
50-54	$1,950	$1,460	$200	$13,610	107.0%
55-59	$2,300	$2,160	$300	$14,760	116.0%
60-64	$3,280	$3,230	$460	$16,970	133.4%
65-69*	$5,100	$0	$460	$15,560	122.3%
65-69**	$5,100	$3,960	$460	$19,520	153.5%
		Salary Level - $25,000			
Under 30	$1,040	$575	$50	$26,665	90.7%
30-34	$1,040	$825	$50	$26,915	91.5%
35-39	$1,040	$1,200	$100	$27,340	93.0%
40-44	$1,040	$1,725	$150	$27,915	94.9%
45-49	$1,600	$2,500	$300	$29,400	100.0%
50-54	$1,950	$3,650	$500	$31,100	105.8%
55-59	$2,300	$5,400	$750	$33,450	113.8%
60-64	$3,280	$8,075	$1,150	$37,505	127.6%
65-69*	$5,100	$0	$1,150	$31,250	106.3%
65-69**	$5,100	$9,900	$1,150	$41,150	140.0%
		Salary Level - $50,000			
Under 30	$1,040	$1,150	$100	$52,290	91.4%
30-34	$1,040	$1,650	$100	$52,790	92.3%
35-39	$1,040	$2,400	$200	$53,640	93.8%
40-44	$1,040	$3,450	$300	$54,790	95.8%
45-49	$1,600	$5,000	$600	$57,200	100.0%
50-54	$1,950	$7,300	$1,000	$60,250	105.3%
55-59	$2,300	$10,800	$1,500	$64,600	112.9%
60-64	$3,280	$16,150	$2,300	$71,730	125.4%
65-69*	$5,100	$0	$2,300	$57,400	100.3%
65-69**	$5,100	$19,800	$2,300	$77,200	135.0%

*Actuarial equivalent increase but no continued pension accrual after age 65
**Continued pension accrual after age 65 and actuarial equivalent benefit increase

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 16

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $0

Pension: Defined Contribution
Percentage of Salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,280	$500	$20	$11,800	96.6%
30-34	$1,280	$500	$20	$11,800	96.6%
35-39	$1,280	$500	$40	$11,820	96.7%
40-44	$1,280	$500	$60	$11,840	96.9%
45-49	$1,600	$500	$120	$12,220	100.0%
50-54	$1,800	$500	$200	$12,500	102.3%
55-59	$2,000	$500	$300	$12,800	104.7%
60-64	$2,560	$500	$460	$13,520	110.6%
65-69*	$3,600	$0	$460	$14,060	115.1%
65-69**	$3,600	$500	$460	$14,560	119.1%
		Salary Level - $25,000			
Under 30	$1,280	$1,250	$50	$27,580	98.0%
30-34	$1,280	$1,250	$50	$27,580	98.0%
35-39	$1,280	$1,250	$100	$27,630	98.2%
40-44	$1,280	$1,250	$150	$27,680	98.3%
45-49	$1,600	$1,250	$300	$28,150	100.0%
50-54	$1,800	$1,250	$500	$28,550	101.4%
55-59	$2,000	$1,250	$750	$29,000	103.0%
60-64	$2,560	$1,250	$1,150	$29,960	106.4%
65-69*	$3,600	$0	$1,150	$29,750	105.7%
65-69**	$3,600	$1,250	$1,150	$31,000	110.1%
		Salary Level - $50,000			
Under 30	$1,280	$2,500	$100	$53,880	98.5%
30-34	$1,280	$2,500	$100	$53,880	98.5%
35-39	$1,280	$2,500	$200	$53,980	98.7%
40-44	$1,280	$2,500	$300	$54,080	98.9%
45-49	$1,600	$2,500	$600	$54,700	100.0%
50-54	$1,800	$2,500	$1,000	$55,300	101.1%
55-59	$2,000	$2,500	$1,500	$56,000	102.4%
60-64	$2,560	$2,500	$2,300	$57,360	104.9%
65-69*	$3,600	$0	$2,300	$55,900	102.2%
65-69**	$3,600	$2,500	$2,300	$58,400	106.8%

*No further contributions after age 65
**Contributions continued after age 65

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 17

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $600

Pensions: Defined Contribution
Percentage of Salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$680	$500	$20	$11,200	96.4%
30-34	$680	$500	$20	$11,200	96.4%
35-39	$680	$500	$40	$11,220	96.6%
40-44	$680	$500	$60	$11,240	96.7%
45-49	$1,000	$500	$120	$11,620	100.0%
50-54	$1,200	$500	$200	$11,900	102.4%
55-59	$1,400	$500	$300	$12,200	105.0%
60-64	$1,960	$500	$460	$12,920	111.2%
65-69*	$3,000	$0	$460	$13,460	115.8%
65-69**	$3,000	$500	$460	$13,960	120.1%
		Salary Level - $25,000			
Under 30	$680	$1,250	$50	$26,980	97.9%
30-34	$680	$1,250	$50	$26,980	97.9%
35-39	$680	$1,250	$100	$27,030	98.1%
40-44	$680	$1,250	$150	$27,080	98.3%
45-49	$1,000	$1,250	$300	$27,550	100.0%
50-54	$1,200	$1,250	$500	$27,950	101.5%
55-59	$1,400	$1,250	$750	$28,400	103.1%
60-64	$1,960	$1,250	$1,150	$29,360	106.6%
65-69*	$3,000	$0	$1,150	$29,150	105.8%
65-69**	$3,000	$1,250	$1,150	$30,400	110.3%
		Salary Level - $50 000			
Under 30	$680	$2,500	$100	$53,280	98.5%
30-34	$680	$2,500	$100	$53,280	98.5%
35-39	$680	$2,500	$200	$53,380	98.7%
40-44	$680	$2,500	$300	$53,480	98.9%
45-49	$1,000	$2,500	$600	$54,100	100.0%
50-54	$1,200	$2,500	$1,000	$54,700	101.1%
55-59	$1,400	$2,500	$1,500	$55,400	102.4%
60-64	$1,960	$2,500	$2,300	$56,760	104.9%
65-69*	$3,000	$0	$2,300	$55,300	102.2%
65-69**	$3,000	$2,500	$2,300	$57,800	106.8%

*No further contributions after age 65
**Contributions continued after age 65

BEST COPY

ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 18

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $0

Pension: Defined Contribution
Percentage of Salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$2,240	$500	$20	$12,760	95.1%
30-34	$2,240	$500	$20	$12,760	95.1%
35-39	$2,240	$500	$40	$12,780	95.2%
40-44	$2,240	$500	$60	$12,800	95.4%
45-49	$2,800	$500	$120	$13,420	100.0%
50-54	$3,150	$500	$200	$13,850	103.2%
55-59	$3,500	$500	$300	$14,300	106.6%
60-64	$4,480	$500	$460	$15,440	115.1%
65-69*	$6,300	$0	$460	$16,760	124.9%
65-69**	$6,300	$500	$460	$17,260	128.6%
		Salary Level - $25,000			
Under 30	$2,240	$1,250	$50	$28,540	97.2%
30-34	$2,240	$1,250	$50	$28,540	97.2%
35-39	$2,240	$1,250	$100	$28,590	97.4%
40-44	$2,240	$1,250	$150	$28,640	97.6%
45-49	$2,800	$1,250	$300	$29,350	100.0%
50-54	$3,150	$1,250	$500	$29,900	101.9%
55-59	$3,500	$1,250	$750	$30,500	103.9%
60-64	$4,480	$1,250	$1,150	$31,880	108.6%
65-69*	$6,300	$0	$1,150	$32,450	110.6%
65-69**	$6,300	$1,250	$1,150	$33,700	114.8%
		Salary Level - $50,000			
Under 30	$2,240	$2,500	$100	$54,840	98.1%
30-34	$2,240	$2,500	$100	$54,840	98.1%
35-39	$2,240	$2,500	$200	$54,940	98.3%
40-44	$2,240	$2,500	$300	$55,040	98.5%
45-49	$2,800	$2,500	$600	$55,900	100.0%
50-54	$3,150	$2,500	$1,000	$56,650	101.3%
55-59	$3,500	$2,500	$1,500	$57,500	102.9%
60-64	$4,480	$2,500	$2,300	$59,280	106.0%
65-69*	$6,300	$0	$2,300	$58,600	104.8%
65-69**	$6,300	$2,500	$2,300	$61,100	109.3%

*No further contributions after age 65
**Contributions continued after age 65

BEST COPY

ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 19

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $600

Pension: Defined Contribution
Percentage of salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
Salary Level - $10,000					
Under 30	$1,640	$500	$20	$12,160	94.9%
30-34	$1,640	$500	$20	$12,160	94.9%
35-39	$1,640	$500	$40	$12,180	95.0%
40-44	$1,640	$500	$60	$12,200	95.2%
45-49	$2,200	$500	$120	$12,820	100.0%
50-54	$2,550	$500	$200	$13,250	103.4%
55-59	$2,900	$500	$300	$13,700	106.9%
60-64	$3,880	$500	$460	$14,840	115.8%
65-69*	$5,700	$0	$460	$16,160	126.1%
65-69**	$5,700	$500	$460	$16,660	130.0%
Salary Level - $25,000					
Under 30	$1,640	$1,250	$50	$27,940	97.2%
30-34	$1,640	$1,250	$50	$27,940	97.2%
35-39	$1,640	$1,250	$100	$27,990	97.4%
40-44	$1,640	$1,250	$150	$28,040	97.5%
45-49	$2,200	$1,250	$300	$28,750	100.0%
50-54	$2,550	$1,250	$500	$29,300	101.9%
55-59	$2,900	$1,250	$750	$29,900	104.0%
60-64	$3,880	$1,250	$1,150	$31,280	108.8%
65-69*	$5,700	$0	$1,250	$31,850	110.8%
65-69**	$5,700	$1,250	$1,150	$33,100	115.1%
Salary Level - $50,000					
Under 30	$1,640	$2,500	$100	$54,240	98.1%
30-34	$1,640	$2,500	$100	$54,240	98.1%
35-39	$1,640	$2,500	$200	$54,340	98.3%
40-44	$1,640	$2,500	$300	$54,440	98.4%
45-49	$2,200	$2,500	$600	$55,300	100.0%
50-54	$2,550	$2,500	$1,000	$56,050	101.4%
55-59	$2,900	$2,500	$1,500	$56,900	102.9%
60-64	$3,880	$2,500	$2,300	$58,680	106.1%
65-69*	$5,700	$0	$2,300	$58,000	104.9%
65-69**	$5,700	$2,500	$2,300	$60,500	109.4%

*No further contributions after age 65
**Contributions continued after age 65

BEST COPY

ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 20

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $1,200

Pension: Defined Contribution
Percentage of Salary 5.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,040	$500	$20	$11,560	94.6%
30-34	$1,040	$500	$20	$11,560	94.6%
35-39	$1,040	$500	$40	$11,580	94.8%
40-44	$1,040	$500	$60	$11,600	94.9%
45-49	$1,600	$500	$120	$12,220	100.0%
50-54	$1,950	$500	$200	$12,650	103.5%
55-59	$2,300	$500	$300	$13,100	107.2%
60-64	$3,280	$500	$460	$14,240	116.5%
65-69*	$5,100	$0	$460	$15,560	127.3%
65-69**	$5,100	$500	$460	$16,060	131.4%
		Salary Level - $25,000			
Under 30	$1,040	$1,250	$50	$27,340	97.1%
30-34	$1,040	$1,250	$50	$27,340	97.1%
35-39	$1,040	$1,250	$100	$27,390	97.3%
40-44	$1,040	$1,250	$150	$27,440	97.5%
45-49	$1,600	$1,250	$300	$28,150	100.0%
50-54	$1,950	$1,250	$500	$28,700	102.0%
55-59	$2,300	$1,250	$750	$29,300	104.1%
60-64	$3,280	$1,250	$1,150	$30,680	109.0%
65-69*	$5,100	$0	$1,150	$31,250	111.0%
65-69**	$5,100	$1,250	$1,150	$32,500	115.5%
		Salary Level - $50,000			
Under 30	$1,040	$2,500	$100	$53,640	98.1%
30-34	$1,040	$2,500	$100	$53,640	98.1%
35-39	$1,040	$2,500	$200	$53,740	98.2%
40-44	$1,040	$2,500	$300	$53,840	98.4%
45-49	$1,600	$2,500	$600	$54,700	100.0%
50-54	$1,950	$2,500	$1,000	$55,450	101.4%
55-59	$2,300	$2,500	$1,500	$56,300	102.9%
60-64	$3,280	$2,500	$2,300	$58,080	106.2%
65-69*	$5,100	$0	$2,300	$57,400	104.9%
65-69**	$5,100	$2,500	$2,300	$59,900	109.5%

*No further contributions after age 65
**Contributions continued after age 65

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 21

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $0

Pension: Defined Contribution
Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,280	$1,000	$20	$12,300	96.7%
30-34	$1,280	$1,000	$20	$12,300	96.7%
35-39	$1,280	$1,000	$40	$12,320	96.9%
40-44	$1,280	$1,000	$60	$12,340	97.0%
45-49	$1,600	$1,000	$120	$12,720	100.0%
50-54	$1,800	$1,000	$200	$13,000	102.2%
55-59	$2,000	$1,000	$300	$13,300	104.6%
60-64	$2,560	$1,000	$460	$14,020	110.2%
65-69*	$3,600	$0	$460	$14,060	110.5%
65-69**	$3,600	$1,000	$460	$15,060	118.4%
		Salary Level - $25,000			
Under 30	$1,280	$2,500	$50	$28,830	98.1%
30-34	$1,280	$2,500	$50	$28,830	98.1%
35-39	$1,280	$2,500	$100	$28,880	98.2%
40-44	$1,280	$2,500	$150	$28,930	98.4%
45-49	$1,600	$2,500	$300	$29,400	100.0%
50-54	$1,800	$2,500	$500	$29,800	101.4%
55-59	$2,000	$2,500	$750	$30,250	102.9%
60-64	$2,560	$2,500	$1,150	$31,210	106.2%
65-69*	$3,600	$0	$1,150	$29,750	101.2%
65-69**	$3,600	$2,500	$1,150	$32,250	109.7%
		Salary Level - $50,000			
Under 30	$1,200	$5,000	$100	$56,380	98.6%
30-34	$1,280	$5,000	$100	$56,380	98.6%
35-39	$1,280	$5,000	$200	$56,480	98.7%
40-44	$1,280	$5,000	$300	$56,580	98.9%
45-49	$1,600	$5,000	$600	$57,200	100.0%
50-54	$1,800	$5,000	$1,000	$57,800	101.0%
55-59	$2,000	$5,000	$1,500	$58,500	102.3%
60-64	$2,560	$5,000	$2,300	$59,860	104.7%
65-69*	$3,600	$0	$2,300	$55,900	97.7%
65-69**	$3,600	$5,000	$2,300	$60,900	106.5%

*No further contributions after age 65
**Contributions continued after age 65

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 22

Medical:
Per Employee Total Cost Per Year $1,600
Employee Contributions per Year $600

Pension: Defined Contribution
Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$680	$1,000	$20	$11,700	96.5%
30-34	$680	$1,000	$20	$11,700	96.5%
35-39	$680	$1,000	$40	$11,720	96.7%
40-44	$680	$1,000	$60	$11,740	96.9%
45-49	$1,000	$1,000	$120	$12,120	100.0%
50-54	$1,200	$1,000	$200	$12,400	102.3%
55-59	$1,400	$1,000	$300	$12,700	104.8%
60-64	$1,960	$1,000	$460	$13,420	110.7%
65-69*	$3,000	$0	$460	$13,460	111.1%
65-69**	$3,000	$1,000	$460	$14,460	119.3%
		Salary Level - $25,000			
Under 30	$680	$2,500	$50	$28,230	98.0%
30-34	$680	$2,500	$50	$28,230	98.0%
35-39	$680	$2,500	$100	$28,280	98.2%
40-44	$680	$2,500	$150	$28,330	98.4%
45-49	$1,000	$2,500	$300	$28,800	100.0%
50-54	$1,200	$2,500	$500	$29,200	101.4%
55-59	$1,400	$2,500	$750	$29,650	103.0%
60-64	$1,960	$2,500	$1,150	$30,610	106.3%
65-69*	$3,000	$0	$1,150	$29,150	101.2%
65-69**	$3,000	$2,500	$1,150	$31,650	109.9%
		Salary Level - $50,000			
Under 30	$680	$5,000	$100	$55,780	98.6%
30-34	$680	$5,000	$100	$55,780	98.6%
35-39	$680	$5,000	$200	$55,880	98.7%
40-44	$680	$5,000	$300	$55,980	98.9%
45-49	$1,000	$5,000	$600	$56,600	100.0%
50-54	$1,200	$5,000	$1,000	$57,200	101.1%
55-59	$1,400	$5,000	$1,500	$57,900	102.3%
60-64	$1,960	$5,000	$2,300	$59,260	104.7%
65-69*	$3,000	$0	$2,300	$55,300	97.7%
65-69**	$3,000	$5,000	$2,300	$60,300	106.5%

*No further contributions after age 65
**Contributions continued after age 65

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 23

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $0

Pension: Defined Contribution
Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$2,240	$1,000	$20	$13,260	95.3%
30-34	$2,240	$1,000	$20	$13,260	95.3%
35-39	$2,240	$1,000	$40	$13,280	95.4%
40-44	$2,240	$1,000	$60	$13,300	95.5%
45-49	$2,800	$1,000	$120	$13,920	100.0%
50-54	$3,150	$1,000	$200	$14,350	103.1%
55-59	$3,500	$1,000	$300	$14,800	106.3%
60-64	$4,480	$1,000	$460	$15,940	114.5%
65-69*	$6,300	$0	$460	$16,760	120.4%
65-69**	$6,300	$1,000	$460	$17,760	127.6%
		Salary Level - $25,000			
Under 30	$2,240	$2,500	$50	$29,790	97.4%
30-34	$2,240	$2,500	$50	$29,790	97.4%
35-39	$2,240	$2,500	$100	$29,840	97.5%
40-44	$2,240	$2,500	$150	$29,890	97.7%
45-49	$2,800	$2,500	$300	$30,600	100.0%
50-54	$3,150	$2,500	$500	$31,150	101.8%
55-59	$3,500	$2,500	$750	$31,750	103.8%
60-64	$4,480	$2,500	$1,150	$33,130	108.3%
65-69*	$6,300	$0	$1,150	$32,450	106.0%
65-69**	$6,300	$2,500	$1,150	$34,950	114.2%
		Salary Level - $50,000			
Under 30	$2,240	$5,000	$100	$57,340	98.2%
30-34	$2,240	$5,000	$100	$57,340	98.2%
35-39	$2,240	$5,000	$200	$57,440	98.4%
40-44	$2,240	$5,000	$300	$57,540	98.5%
45-49	$2,800	$5,000	$600	$58,400	100.0%
50-54	$3,150	$5,000	$1,000	$59,150	101.3%
55-59	$3,500	$5,000	$1,500	$60,000	102.7%
60-64	$4,480	$5,000	$2,300	$61,780	105.8%
65-69*	$6,300	$0	$2,300	$58,600	100.3%
65-69**	$6,300	$5,000	$2,300	$63,600	108.9%

*No further contributions after age 65
**Contributions continued after age 65

BEST COPY

ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 24

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $600

Pension: Defined Contribution
Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,640	$1,000	$20	$12,660	95.0%
30-34	$1,640	$1,000	$20	$12,660	95.0%
35-39	$1,640	$1,000	$40	$12,680	95.2%
40-44	$1,640	$1,000	$60	$12,700	95.3%
45-49	$2,200	$1,000	$120	$13,320	100.0%
50-54	$2,550	$1,000	$200	$13,750	103.2%
55-59	$2,900	$1,000	$300	$14,200	106.6%
60-64	$3,880	$1,000	$460	$15,340	115.2%
65-69*	$5,700	$0	$460	$16,160	121.3%
65-69**	$5,700	$1,000	$460	$17,160	128.8%
		Salary Level - $25,000			
Under 30	$1,640	$2,500	$50	$29,190	97.3%
30-34	$1,640	$2,500	$50	$29,190	97.3%
35-39	$1,640	$2,500	$100	$29,240	97.5%
40-44	$1,640	$2,500	$150	$29,290	97.6%
45-49	$2,200	$2,500	$300	$30,000	100.0%
50-54	$2,550	$2,500	$500	$30,550	101.8%
55-59	$2,900	$2,500	$750	$31,150	103.8%
60-64	$3,880	$2,500	$1,150	$32,530	108.4%
65-69*	$5,700	$0	$1,150	$31,850	106.2%
65-69**	$5,700	$2,500	$1,150	$34,350	114.5%
		Salary Level - $50,000			
Under 30	$1,640	$5,000	$100	$56,740	98.2%
30-34	$1,640	$5,000	$100	$56,740	98.2%
35-39	$1,640	$5,000	$200	$56,840	98.3%
40-44	$1,640	$5,000	$300	$56,940	98.5%
45-49	$2,200	$5,000	$600	$57,800	100.0%
50-54	$2,550	$5,000	$1,000	$58,550	101.3%
55-59	$2,900	$5,000	$1,500	$59,400	102.8%
60-64	$3,880	$5,000	$2,300	$61,180	105.8%
65-69*	$5,700	$0	$2,300	$58,000	100.3%
65-69**	$5,700	$5,000	$2,300	$63,000	109.0%

*No further contributions after age 65
**Contributions continued after age 65

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ATTRIBUTED COST OF SAMPLE COMPENSATION PLAN BY AGE
Exhibit A - 25

Medical:
Per Employee Total Cost Per Year $2,800
Employee Contributions per Year $1,200

Pension: Defined Contribution
Percentage of Salary 10.0%

Life Insurance - 2 times Pay - Noncontributory

Age Group	Medical Cost Paid by Employer	Pension Cost Paid by Employer	Life Insurance Cost Paid by Employer	Salary plus Stated Benefits	Cost Relative to Age 45-49
		Salary Level - $10,000			
Under 30	$1,040	$1,000	$20	$12,060	94.8%
30-34	$1,040	$1,000	$20	$12,060	94.8%
35-39	$1,040	$1,000	$40	$12,080	95.0%
40-44	$1,040	$1,000	$60	$12,100	95.1%
45-49	$1,600	$1,000	$120	$12,720	100.0%
50-54	$1,950	$1,000	$200	$13,150	103.4%
55-59	$2,300	$1,000	$300	$13,600	106.9%
60-64	$3,280	$1,000	$460	$14,740	115.9%
65-69*	$5,100	$0	$460	$15,560	122.3%
65-69**	$5,100	$1,000	$460	$16,560	130.2%
		Salary Level - $25,000			
Under 30	$1,040	$2,500	$50	$28,590	97.4%
30-34	$1,040	$2,500	$50	$28,590	97.2%
35-39	$1,040	$2,500	$100	$28,640	97.4%
40-44	$1,040	$2,500	$150	$28,690	97.6%
45-49	$1,600	$2,500	$300	$29,400	100.0%
50-54	$1,950	$2,500	$500	$29,950	101.9%
55-59	$2,300	$2,500	$750	$30,550	103.9%
60-64	$3,280	$2,500	$1,150	$31,930	108.6%
65-69*	$5,100	$0	$1,150	$31,250	106.3%
65-69**	$5,100	$2,500	$1,150	$33,750	114.8%
		Salary Level - $50,000			
Under 30	$1,040	$5,000	$100	$56,140	98.1%
30-34	$1,040	$5,000	$100	$56,140	98.1%
35-39	$1,040	$5,000	$200	$56,240	98.3%
40-44	$1,040	$5,000	$300	$56,340	98.5%
45-49	$1,600	$5,000	$600	$57,200	100.0%
50-54	$1,950	$5,000	$1,000	$57,950	101.3%
55-59	$2,300	$5,000	$1,500	$58,800	102.8%
60-64	$3,280	$5,000	$2,300	$60,580	105.9%
65-69*	$5,100	$0	$2,300	$57,400	100.3%
65-69**	$5,100	$5,000	$2,300	$62,400	109.1%

*No further contributions after age 65
**Contributions continued after age 65

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